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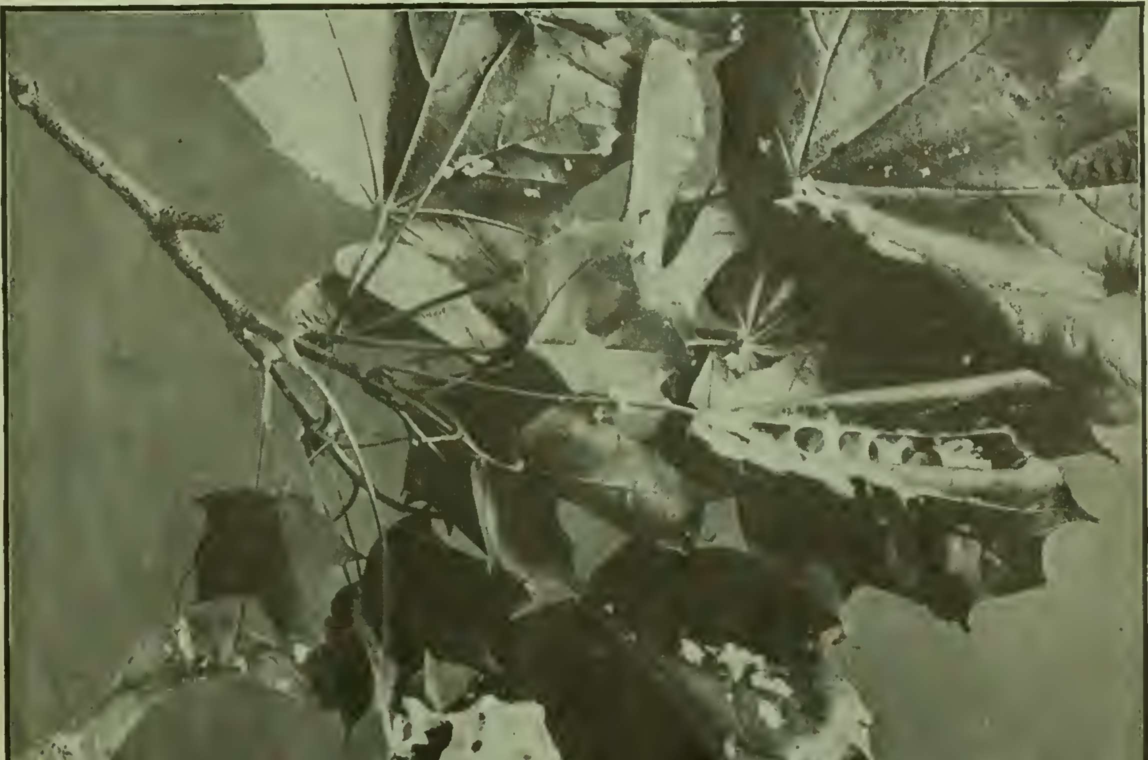
# AMERICAN BEE JOURNAL

JANUARY, 1920

JAN 6 1920
Agricultural College



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## Winter Problem Solved
BY THE
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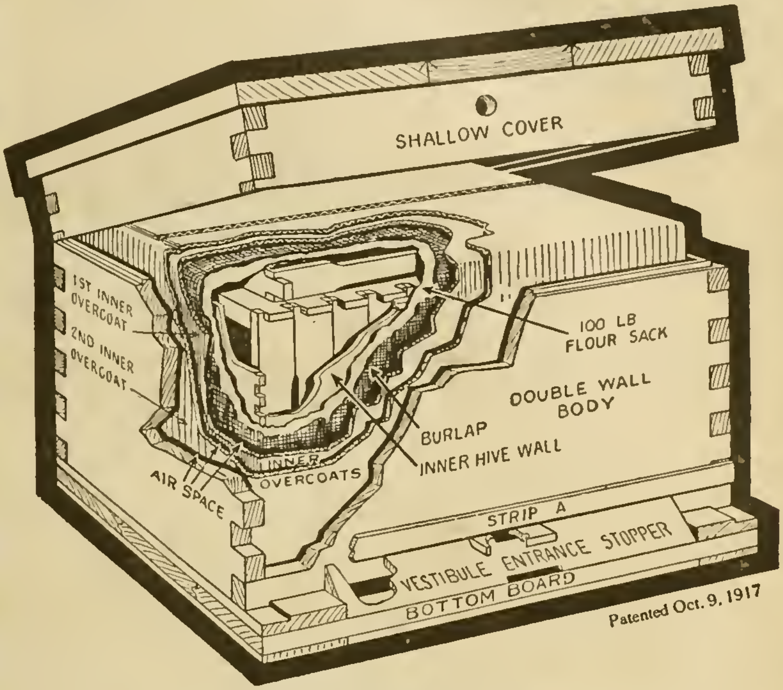

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In January of this year, Mr. Pellett, the associate editor of the American Bee Journal, wrote us suggesting that we place on the market, Protection Hives with Jumbo depth frames. He stated that if we could furnish them with 1 1-2 inch spacing, that in his opinion we would have very nearly an ideal hive, and if he was again to engage in commercial honey production, this would be the hive that he would want. Numerous like requests from other bee keepers for this same equipment have been received.

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Standard single hive, comb or extracted honey supers or bodies in the 10 frame size, are regular equipment for Protection Hives.

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Add price of queen when ordering bees.

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was championed and used extensively by Charles Dadant as early as 1868, and he had recognized its advantages even earlier than that.

Not satisfied with either the ten-frame of Langstroth or the eight-frame hive of the size advocated by Quinby, he experimented with different sizes and styles before adopting a hive of ten frames, Quinby size.

Some of the hives used in his experiments in large numbers were:

8 to 14 frame Langstroth.

8 to 16 frame Quinby.

10 to 20 frame Debeauvois with frames 12x12.

Coffin shaped hive with a circular frame.

Hives with frames 18x18 inches.

CHARLES DADANT

His ideal hive embodied the following points:

1. A deep frame to conform to the egg-laying circle of the queen.
2. A large, compact brood chamber in one story capable of accommodating the most prolific queen.
3. Ample ventilation by means of 1½ inch spacing of frames.
4. Excellent for wintering on account of the 1½ inch spacing and large amount of honey over the cluster in the deep frame.
5. Swarm control through the wide spacing and large brood chamber.
6. Shallow 6¼ inch super frames for storage.

The Original Dadant Hive he advocated and used did not adapt itself to the great amount of Langstroth equipment already in use. Moreover, it was very expensive. To remedy these two drawbacks, we have evolved and now offer

## THE MODIFIED DADANT HIVE

1. **Eleven Frames, Langstroth Length, Quinby Depth.**
2. **1½ inch spacing of frames for swarm control.**
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4. **Dovetailed body, regular reversible cypress bottom and metal roof cover with inner cover.**
5. **Langstroth equipment easily used in connection.**

Our more than fifty years experience with bees in large hives convinces us that this is the hive for **extracted honey.**

If you want strong colonies, large honey crops, little swarming and good wintering, we believe this is the hive for you.

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AMERICAN
BEE JOURNAL

VOL. LX—NO. 1 HAMILTON, ILL., JANUARY, 1920 MONTHLY, $1.00 A YEAR

# PHYSIOLOGY OF NECTAR SECRETION

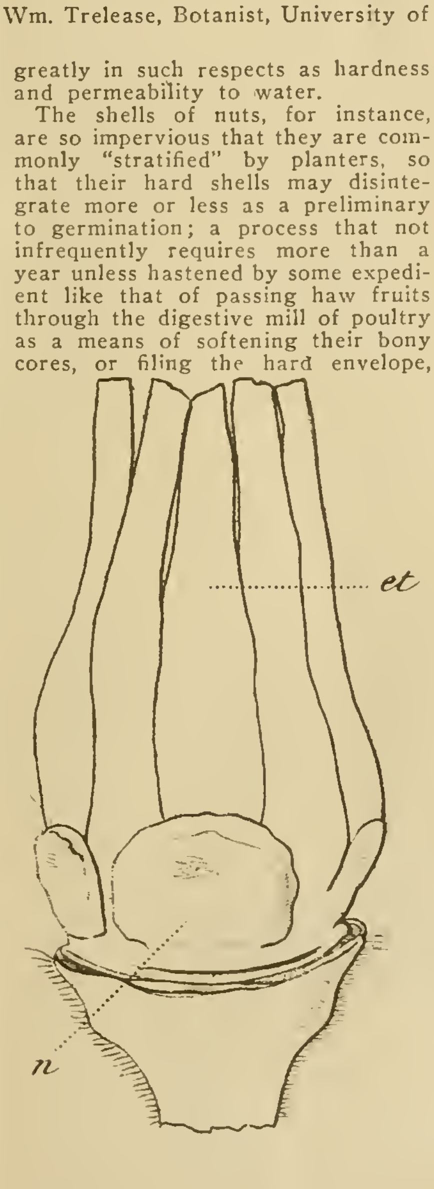
By Dr. Wm. Trelease, Botanist, University of Illinois.

WHAT we call individual plants are complex communities of real but microscopic individuals, which biologists call cells. These are associated in numerous sub-communities, differing from one another in structure and function. Their specialization results in a division of labor and a correspondingly large total efficiency, much as specialization and division of labor lead to efficiency and productive possibilities in a nation consisting of States and these of smaller communities made up of trades, guilds and professions, which in co-operation follow the manifold activities that characterize a nation and collectively constitute the national life of its individuals, which is far more effective and greater than the individual life of any one person or class.

The active, living part of a cell is its protoplasm—the physical basis of life, as Huxley calls it—in animals and plants alike. Commonly this protoplasm encloses itself by a wall of cellulose, an organic substance manufactured by the protoplasm. Where two cells are in contact, they are usually flattened against one-another. When men first began to use the microscope, only a little over two centuries ago, it was the walls and shapes of cells that attracted attention, and the resemblance to honeycomb on a small scale was so striking that the cavities were naturally called cells.

Protoplasm itself is a very complex substance chemically, and even the much simpler cell-wall is far from being always of really one identical substance. A considerable part of the thickening of matured cell-walls has been laid down on the original partition between two cells, and not only differs from this but is not alike in different kinds of cells, and in structures like wood and cork it is impregnated with other materials that affect the cell wall very greatly in such respects as hardness and permeability to water.

The shells of nuts, for instance, are so impervious that they are commonly "stratified" by planters, so that their hard shells may disintegrate more or less as a preliminary to germination; a process that not infrequently requires more than a year unless hastened by some expedient like that of passing haw fruits through the digestive mill of poultry as a means of softening their bony cores, or filing the hard envelope, which is a favorite trick of gardeners with the nut-like fruits of the lotus or with canna seeds. (This is similar to the scarifying of sweet clover seed.—Editor). This is the reason that several times as much clover seed—even good seed—must be used on an acre as seems necessary for securing the desired number of plants. One of these modifications is usual in the outer layers of cell walls on the surface, and it is called cuticularization. Cuticularized walls are more or less completely waterproofed. When the cells that produce nectar are at the surface, their outer walls are cuticularized in this way: when they are within the nectary and the nectar passes out through stomata, this is scarcely, if at all the case.



Part of flower of *Geranium pyrenaicum*. N. nectaries; et. stamens. Greatly magnified. Copied from Bonnier's "Les Nectaires.

The greater part of nectar is water which reaches the surface from within the plant cells. To do this it must pass through walls that are little if at all cuticularized, or it must break through the cuticle. This does not mean that it must break through the entire cell wall; a small part of this is modified by the protoplasm into a gum or mucilage or some similar substance, and the water accumulates in this layer and swells it until the overlaying cuticle is burst. Some form of sugar is a frequent result of this disintegration of cellulose. Dissolved sugars pass through the ordinary celulose wall, but they do not pass through the ordinary surface layer of protoplasm in the outer cells.

When water is separated from a solution like that of sugar by a filter of this sort, which allows water to pass, but is not permeable to the dissolved substance, the action is set up that physicists call osmosis, and water accumulates on the sides of the dissolved substance until it exercises a very considerable pressure. This osmotic action not only bursts the cuticle, when it starts beneath it, but results in a flow of water from within the plant, at that point.

The absorbing roots of plants show another result of this physical property, osmosis. They are not waterproofed; water is continuous through them, from the thin layer in which it occurs about particles of the soil, to the water, which composes a great part of the weight of the protoplasm within the cells. This sap of the root cells contains dissolved sugar and other osmotic substances. Osmotic absorption by the roots results in a pressure of several atmospheres. This pressure, passed from cell to cell, gives the crispness to fresh celery. Its loss, through evaporation from the leaves, results in the loss of this crispness, or wilting.

When evaporation is slight, as in a saturated atmosphere, water exudes at the surface through pores such as occur at the tip of a young grass or clover leaf. Water pores of this sort are common. They are regarded as pressure-valves by many botanists. The water that they eliminate is usually filtered by the protoplasm that it passes through, which does not allow the passage of substances dissolved in the cell sap; but some plants which grow where they absorb very "hard" water pass lime salts out through their water pores to such an extent that they are encrusted with lime as the water evaporates.

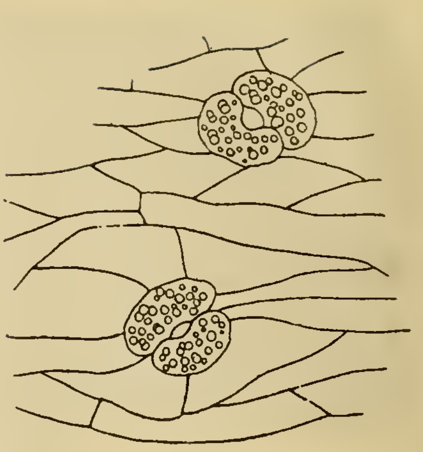
The safety-valve elimination of water under strong internal pressure and lessened normal evaporation is hardly to be called excretion or secretion; the extruded water is neither by-product nor manufactured output. The elimination of lime appears to be on the border line of excretion.

Nectar is not merely water; if it were its production would be more easily understood. To the taste it is sweet, to the sense of smell is is often fragrant; occasionally it is poisonous; often it is somewhat colored. Commonly it is very fluid, but in the nectar-cups of poinsettia it becomes very gummy. These properties come from substances—sugars, volatile oils, poisonous organic compounds—that were made by and in the plant, and they differ in different kinds of plants. Whatever bees or ants may do in changing nectar into honey, they do not entirely change or remove these substances, and the rank brown honey of the drug store is as easily run to its source as the popular white clover honey, the daintily flavored product of western alfalfa, the aromatic acid honey of the red raspberry, or the greenish product of the sweet clover, with its delicate vanilla-like aroma, the cumarin source of which shows itself in an occasional headache, much as the minor organic constituents of some honeys derived from the heath family now and then prove seriously poisonous.

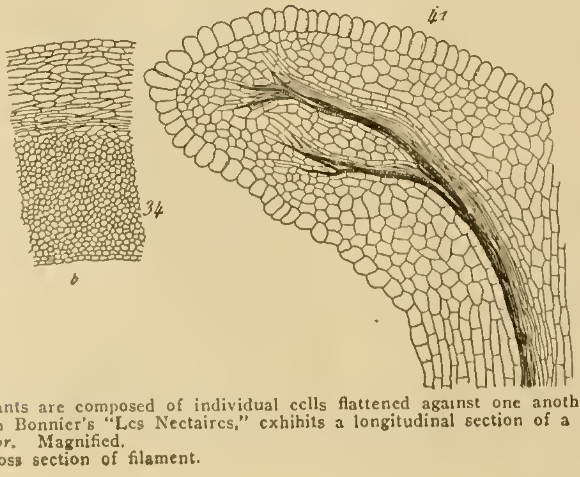
A fluid that contains these organic substances necesarily falls into the catagory of excretions or secretions, according as it represents waste or usable material. As either excretion or secretion, it is the product of specialized organs, glands, and its appearance marks these glands as in action or performing their function. Whatever else may be involved, this depends upon the activity of their protoplasm, or is controlled by it. When this is killed, secretion or excretion stops.

One result of the protean character of protoplasm is its different behavior in different plants, different organs of the same plant or different phases of the activity of an individual cell. In either case it can perform its functions only between certain limits of environment, and it performs them best somewhere between these limits. For each function and each condition there is what physiologists call a minimum—below which it is not carried on, a maximum—above which it has stopped, and an optimum—or most favorable. Just as in the efficient working of a human factory, power and raw materials are necessary, and workmen must be onto the job, however favorable the other conditions of manufacture may be.

The secretion of nectar and the storing of honey are consequently not quite comparable; for the activities of the honey plant are concerned with the first, and the activities of the bee are concerned in the second, though these are largely influenced by what the plant is or is not doing. This must be remembered always when comparing such records of honey storing as Mr. Strong's careful hive-weighings through a generation, with Mr. Kenoyer's quantitative measurements of nectar secretion.



Stomata on nectariferous tissue of *Xanthoceras sorbifolia*. Greatly magnified. Copied from Bonnier's "Les Nectaires."



All parts of plants are composed of individual cells flattened against one another. This figure copied from Bonnier's "Les Nectaires," exhibits a longitudinal section of a stamen in *Collinsia bicolor*. Magnified.
At left (34) cross section of filament.

Nevertheless, the most favoring conditions of nectar secretion and honey storing agree in a number of respects. Vigorous early development of the plant puts it in condition to do its share of the work best; whatever conditions may prevail during what for most plants is a very short part of the growing season, when it is in bloom. Vigorous early development of the hive bears the same kind of relation to the final result. Early honey must be stored before the bees have reached the full strength of the season, which may have something to do with the fact that the bulk of the harvest is gleaned from plants that flower later or continue to flower for a relatively long time.

Mr. Strong's observations in Iowa show that over half of the net increase in honey storage, in southern Iowa, is made in June, and over four-fifths in June and July. These are the months when the most productive nectar plants flower, and the hives have reached the crest of their speculative activity and are undergoing division by that time.

Physiological studies show that the afternoon temperature for nectar secretion is high—between 90 and 100 degrees Fahrenheit. Observation on the hive shows that its workers are at their active best in moderately hot weather. Mr. Strong's 29-year average shows that over half of the average honey for the year is stored when the daily maximum is between 80 and 90 degrees, and nine-tenths of it is stored when the high temperature of the day is between 80 and 100 degrees. Nectar is most abundantly secreted, other conditions being equal, in warm days following cool nights; bees do not seem usually to work more actively on such days, though a record day for heather honey in England began with a frost. Damp air increases the quantity of nectar, as of the expulsion of water through water pores; but dull rainy weather lessens or stops the activity of the bees.

Nuptial nectar is secreted chiefly before or during the period of sexual maturity of the flowers. Many, like cotton, golden currant and horse-chestnut, change color as this period of sexual functioning and maximum nectar secretion passes, and bees often are quick to catch the signal. Extra nuptial nectar is secreted in greatest quantity while near-by flowers and foliage of the plant are young.

Nectar differs from time to time in quality as well as in quantity. In damp weather the increased quantity commonly causes a greater dilution of its contents of sugar, and the bees have been shown to store a greater weight of honey several days after a rainy day than immediately following it. Though the greater part of nectar is water, its essential part, for the bee-man, is sugar, chiefly a mixture of two kinds of sugar that possess a different molecular arrangement though containing the same number of carbon, hydrogen and starch atoms, which causes them to behave differently when examined by polarized light and materially affects other of their physical properties.

The flow of the water of nectar seems to be like that of water through water pores, an infiltration under pressure when root-absorption is active and leaf evaporation checked; but thoroughly and repeatedly washing the glands sometimes puts a stop to it. Beating rain does this as effectively as experimental washing. Change of position and closing in dark rainy weather characterize some flowers, and keep the rain from washing away their accumulated nectar and checking its replenishment. This was Sprengel's explanation of the fringe of hair on the petals of the wild geranium. In proportion as such nectar guards are effective, they preserve the supply and contribute to its continuance; in proportion as rain has opportunity to beat upon the nectar glands it wastes, and may even check, the production of nectar.

This stopping of nectar flow by washing away the secretion of the glands, is connected with the affinity for water of sugars. The flow of water appears to be started by the osmotic force of the disintegrated part of the walls of the secreting cells; it is stopped when the resulting substance has been removed from the outer surface of the secreting cells.

If this were all, unless the degenerating cellulose were replenished in sufficient quantity, there would hardly be such a thing as honey production. Indeed, some extranuptial glands secrete a nectar containing so little sugar that even ants may not be attracted by it, as is said to be the case with climbing smartweeds cultivated in England, though it is not usually true of such plants growing wild here where they are at home. Commonly, however, the sugar in nectar is replenished while the secretion of fluid continues.

The passage out of sugar from a living cell is very different from the escape of water; the latter may result from pressure on the one hand or osmotic draft on the other, because the outer protoplasm is permeable to water but not to sugar. When sugar is secreted, this protoplasmic layer becomes to a greater or less degree permeable to the escaping sugar. This is one phase of the activity of the living protoplasm, for secretion is a vital phenomenon. What greater or less permeability of protoplasm actually consists in is a matter of theory rather than of observation, but the phenomenon is a subject of observation and experiment. Alternating warmth and cold, within limits, affect it; it has its optimum at a rather high temperature, as well as its minimum and maximum. Through an adequately permeable membrane, the flow of either water or sugar may be outwards—as it is in normal secretion, or inwards — when the secretion is absorbed—as experiments show to be true under some conditions.

Water for nectar secretion is obtained in the first place through the roots of the plant and travels from the point of absorption to the point of secretion. Sugar for nectar secretion is manufactured within the plant, very close to the point where it is secreted. It is primarily a product of the carbon-fixing or photosynthetic activity (or in other words, assimilative activity.—Editor.) that marks green plants as the food makers of the world. Sugars appear to be among the earliest formed of such carbon-containing or organic substances in the plant; but usually they are changed into starch for storage, and this is subsequently digested or transformed into a sugar when the time of its use comes. The cells about some nectar glands are storage repositories of sugar; in other cases they accumulate a reserve of starch, as raw material, before their activities begin in supplying sugar.

Evidently, back of the nectar-production of a given day or season, very closely related to its own optimum conditions of temperature and humidity, lies the earlier vegetation of the nectar-producing plants. Strength and vigor of growth, a good reserve of stored food from the year before, or favorable spring season, these would seem logically to affect the activity of the plant in performing this as well as others of its functions.

Kenoyer's conclusions, from Strong's honey-gathering statistics, give support to this expectation: "There is an evident alteration be tween good and poor years," as in ample production; "a good year has a rainfall slightly above the average, preceded by an autumn, winter and spring with more than the average precipitation," affording adequate and lasting soil moisture; "a rainy May scarcely fails to precede a good honey season," for the same reason; "a cold winter has no detrimental effect on the yield of the succeeding season, but a cold March reduces it," through preventing a fair early growth of the honey plants; "a winter of heavy snowfall, in the great majority of cases, is followed by a larger honey yield," because of its contribution to the soil moisture and the protection afforded the plants during their hibernation.

Of these conclusions, most bear directly on the conditions favorable for nectar secretion by the plants; some bear as directly on those favorable for the wintering in prime condition of the bees. Honey production rests upon both, not only in June and July and on individual days in those months of greatest honey storage, but on preceding days and months of preparation. Perhaps the suggestion may be made, even, that it goes much further back, through long centuries of selective evolution, side by side, of nectar-yielding plants and honey-storing insects, gradually coming into mutually helpful harmony.

M. D. Johnson of Webster, Iowa, uses cement walks for hive stands. Last year 102 colonies were increased to 150 and 6,500 pounds of comb honey secured.

AMERICAN BEE JOURNAL
Established by Samuel Wagner in 1861

The oldest Bee Journal in the English language. Consolidated with The National Bee Journal in 1874.

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C. C. Miller ..................Questions Department
Maurice G Dadant ..................Business Manager

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# THE EDITOR'S VIEWPOINT

## Nectar Secretion

The feature article in this number, by the eminent botanist, Dr. Trelease, we believe to be worthy of thorough study by every one of our readers. In order to make his description of the anatomical structure of plants more intelligible to those of our readers who have not had a college education—and they are numerous—we have borrowed three figures from a noted European work published 40 years ago, "Les Nectaires," by Bonnier, which contains 130 such cuts. It gives a definite idea of what "cells" and "nectaries" are.

## Are We Good Samaritans?

The following was received from Mr. Crepieux-Jamin, of Rouen, the former associate editor of the "Revue Internationale d' Apiculture":

"I am greatly moved by your appeal to the American beekeepers in your October number. Never has help been more greatly needed than it is at present in our northern districts. The disaster defies description; one must see to believe. For hundreds and hundreds of kilometers everything is destroyed to such an extent that in some cases it is impossible to find the exact location of a former village without a survey. It is frightful. Wherever things had been left standing after the bombardment, the Germans burned them or blew them up, cutting down the fruit trees and the shrubbery. It is a desert. The people come there with some money, but they go away discouraged. Some, however, begin to rebuild among the ruins. Some beekeepers whom I know would be glad to begin over with a colony or two. The busy hum of the bees would undoubtedly encourage them. What they hope for, is to be helped with a fresh start, the first few colonies.

"A school teacher whose apiary was destroyed was trying to rebuild it. I sent him 20 francs. He returned the money, saying that all he wished for was a few hives of bees. But where could he secure them?

"However, the only way to rescue them is with financial help, and secure bees from away, for a start. Your generous initiative is greatly appreciated here.

J. CREPIEUX-JAMIN."
October 26.

Bees may be secured, not far away, in the Netherlands, Central and Southern France can furnish some; but there, also, the number of colonies is reduced, owing to bad seasons and the shortage of sugar. Were it not for the distance and the ocean transit, it would be advisable to send colonies from here. But there would be too much risk. Cash, queens and supplies, cash especially, is needed. Let us add to the subscription to make a gift worth while.

A commission is organized composed of the following persons:

Dr. E. F. Phillips, Washington, D. C.
Dr. C. C. Miller, Marengo, Ill.
C. P. Dadant, Hamilton, Ill.
Mr. Leon Tombu, Huy, Belgium.
Mr. Outhelin, Professor at the College of Nancy, France.
Mr. E. Perroncito, Turin, Italy.

The last named gentleman is put upon the commission membership because some help is being secured from Italy, also. It will be the duty of these parties to make proper distribution of the funds and the supplies, queens, etc., in France and Belgium.

As we cannot go there ourselves to see about the distribution, I propose that we put the American interests in charge of the Society of Friends, whose representative is on the spot. Dr. Miller agrees to this.

The list of subscriptions is as follows, up to December 8:

| | |
|---|---|
| Previous subscriptions | $331.35 |
| F. L. Goss, Harwood, Mo. | 1.00 |
| Edgar L. Hermance, New Haven, Conn. | 2.00 |
| James Maxwell, Marshfield, Wis. | 1.00 |
| Dr. Bonney, Buck Grove, Ia. | 5.00 |
| Jas. A. Neilson, O. A. C. Guelph Ontario | 1.00 |
| F. C. Pellett, Hamilton, Ill. | 5.00 |
| Mildred P. Sturdevant, Boulder, Colo. | 2.00 |
| Morley Pettit, Georgetown, Ontario | 5.00 |
| Nels Lauritsen, Clinton, Ia. | 1.00 |
| H. Lathrop, Bridgeport, Wis. | 5.00 |
| Dr. C. C. Miller, Marengo, Ill. | 5.00 |
| C. E. Miller, Clarks, Penn. | 2.50 |
| Thos. Clark, Hamilton City, Calif. | 1.00 |

GRANDPRÉ (Ardennes). - Vue générale, prise du Château

Village of Grandpre in 1913, as shown in January, 1914. American Bee Journal, when the Dadants visited there.

| | |
|---|---|
| D. Barone, New York City | 3.00 |
| M. D. Johnson, Webster, Ia. | 5.00 |
| J. W. Stine, Burlington, R. F. D., Iowa | 2.00 |
| E. J. Baxter, Nauvoo, Ill. | 5.00 |
| H. M. Elder, Hamilton, Ill. | 5.00 |
| W. P. Southworth, Sioux City Ia. | 10.00 |
| T. G. Lytle, Baltimore, Md. | 2.00 |
| Howard G. Pfaltzgraff, Dumont, Ia. | 5.00 |
| W. C. Kelsey, Orland, Ill. | 2.00 |
| Edw. M. Cooke, Sr., Terryville, Conn. | 1.00 |
| Total | $408.85 |

Additions to subscriptions in supplies:

A. E. Crandall, Berlin, Conn., 12 Queens; Texas HoneyProducers' Association, San Antonia, 200 pounds foundation; Noah Bordner, Holgate, Ohio, 1 year A. B. J. and 5 pounds foundation; Chas. Boone Saunders, Meron, Ind., 10 queens; J. W. Stine, Burlington, Ia., 6 queens.

Total approximate subscribed, $1,000.

Here is a man who is "all wool and a yard wide," or, as a Frenchman would say, "bon teint.":

"Enclosed find $1.25, for which please send American Bee Journal for one year to some beekeeper in France or Belgium, with instructions to pass it on from one beekeeper to another, as I think they need good bee literature as much as supplies. I am also sending you 5 pounds of foundation, which please forward to the needy beekeepers of Europe.
"NOAH BORDNER, Holgate, O."

Indeed we will do as requested, and if we should be unable to find Belgian or French beekeepers who can read English, we will send the French edition of Langstroth in place of the Journal.

Perhaps we can give a good idea of present conditions over there by quoting a letter received from the village of Grandpre, already mentioned by us, which we visited in 1913, as described in American Bee Journal of September, 1913, and January, 1914. This village, in the Argonne, was often mentioned during the war, and was re-conquered by the Americans:

"At this time, November 8, there are workmen of many nationalities, in Grandpre, for they are building temporary shelters for the inhabitants. The work of rebuilding homes cannot be begun till spring.

"Our sons are still in the army. My sister lives in the Cote D'Or with her husband. As to our old cousin, he died right here under Prussian rule.

"I send you pictures of our old village. At the end of Montflie street, on the right, the American Society of Friends have fixed up a big house where they give work to the young girls. That is where our little Georgette goes to work every day. It helps a great deal, for winter is at hand. It has been snowing, and there is no other work yet. The winter bids fair to be hard; but if we keep our health, we will get along.
"MRS. CHORIN."

Come on, Boys! Let us have more.

### Doctor Miller Improved

I am in receipt of a letter from Doctor Miller, as follows:

"I am happy to report that "Richard is himself again"—or at least in that neighborhood. I now sit up a third of the day, and yesterday went outdoors as far as the big basswood in front of the house. I am told that, with care, several years are before me, but over-exertion at any time might be fatal. I'll try to keep shy of over-exertion. But I have no feeling that anything is wrong with me except the feeling of weakness.

"So send on your questions and I'll scratch around to find the answers.
"C. C. MILLER."

No, Doctor, we are not going to send you any Questions to answer for a while yet. We ask the readers who have questions to ask, to continue sending them to the American Bee Journal office. We are going to do our share to keep you from over-exertion.

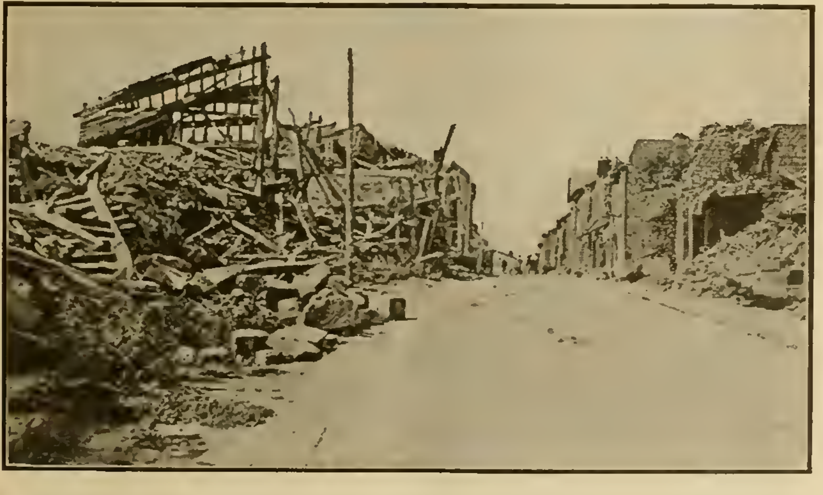
### L'Apicoltore Changes Its Home

Count Visconti Di Saliceto and Dr. Emilio Triaca, President and Vice President of the Italian Society or Beekeepers, make announcement, in the October number of L'Apicoltore, that after January 1, this periodical, which will enter its 53rd year of life, will be published at Reggio, Calabria, by its present editor, Dr. Vincenzo Asprea. Dr. Asprea is an experienced and a capable linguist. He is therefore amply fitted to continue the progressive course of this progressive periodical. We wish him and the old reliable magazine great success. L'Apicoltore has been published in Milan since its establishment in 1868. It gives more quotations from American bee magazines than any other publication in the world.

### Tariff

"The writer firmly believes that this country should have a tariff of from 3 to 5 cents a pound on honey. American honey is at present confronted with foreign competition and in most cases this competing honey is of an inferior grade, produced in foreign countries where labor is cheap, and such competition is quite unfair to the beekeeping interests of America, where the best honey of the world is produced. . . . "
—The California Honey Bowl.

Almost exactly the same arguments may be read in foreign bee magazines against American honey, which they also say is of low grade and cannot be compared with their own product. Tariff is a two-edged sword. You may become convinced of the necessity of a tariff when you take only the selfish view. But when you read it in the other country's magazine, you realize how unfair such arguments are.



Montflie Street, in Grandpre, in the Argonne. The building on the right, with a roof on, was restored by the Americans and is now used as a work room for girls. The fourth or fifth house on the left, was the home of a beekeeper, Mr. Urique, in 1913, when we visited there. Mention was made of him in A. B. J. for September, 1913. He was also a candle-maker.

## Small Vs. Large Hives

By E. F. Atwater.

THE testimony of reliable and extensive producers, in some localities, indicates that commercial extracted honey production may be carried on successfully without special manipulation for swarm control.

Some say that if the flow is very heavy there is so little swarming as to make an effort at its control by special manipulation unprofitable, while others with light flows, long continued or even intermittent, have but little swarming. Fortunate producers they.

But in most localities, given strong colonies, ready for the flow, and the flow materializing, slow or rapid, then the man who relies on the large hive with abundant supers of empty comb to prevent swarming, is likely to lose heavily.

In most localities it is unfortunately not true that bees with an abundance of empty comb will not swarm, in spite of Quinby, Doolittle and Dadant to the contrary.

The writer was once talking with a practical producer, than whom few have traveled more widely among the beekeepers of many States, and put the question, "Where have you found commercial producers who succeed in swarm prevention by the use of large hives and abundant empty combs, without special manipulation or control?"

The answer was, "Nowhere."

Now, let us consider the spacing of brood combs, and its influence on swarm control or prevention.

A hobby-riding craft, first we swing one way, then the other, to the great profit of the supply makers, to the doubtful benefit of the bees, and the usual detriment to our pocketbooks.

The writer has used 8-frame hives by the hundreds, with no division board, and for some years, 200 that were 12⅝ inches wide inside, giving real 1½-inch spacing, and so used, excluder or no excluder, up to six stories high, they tried to swarm, as a rule.

Then we have used many 10-frame hives, as do many in central California, with only nine frames, again giving full 1½-inch spacing, and note no difference in the tendency to swarm.

We have seen both spacings used, in many yards, in several States, and cannot remember one producer who was sure that the wider spacing had any appreciable influence in swarm prevention.

If there were no standard spacing, the writer might prefer the wider spacing, but as there is a standard where self-spaced frames are used (and their use is becoming almost universal) it seems that a change is inadvisable, without proof based on evidence that would be acceptable to trained scientists, that the change is really desirable.

The Dadant hive, made for 11 frames, if the writer remembers correctly, has not room for the 11 frames, spaced 1½ inches from center to center, and the extra space required on each side of the hive, which cannot well be less than one-quarter or one-half inch added to the 16½ inches required by the 11 frames, so the actual spacing is less than 1½ inches from center to center, unless a division board is used in place of one comb somewhat thinner than a comb, which would allow the frames to be spaced a little wider apart.

Now, in regard to hive size. Unquestionably, in most localities, bees, for best results, require large hives, very large hives.

Since the conclusive work done by Dr. Phillips and Mr. Demuth, we know that it is profitable and possible in many localities, to have 12 Langstroth frames full of brood before our flow. As space must always be allowed during spring breeding for extra stores, and as the 12 frames of brood cannot usually be had without such stores, it is apparent that a 9-frame Jumbo, as used by A. C. Miller, is quite too small, in many localities.

The 11-frame Dadant hive is none too large, so far as comb capacity is concerned, and will produce, on the average, more bees than can be had with a large brood-nest in 2 stories.

It is quite possible that the 11-frame Dadant hive is too small, during the spring breeding period.

Where it is desirable to use a large hive, with little or no spring "fussing," but abundant stores and large breeding space, the 2-story, 10-frame Langstroth is not easily excelled.

Especially would this be the case if really sufficient packing be used, and left on as late as possible, so that brood may be readily reared in both stories, in spite of the waste space of bottom-bars, beespace and top-bars, between the two stories.

Again, not only is the 10-frame hive becoming a real standard, but in the hands of the average man its combs are more likely to be free from sag, and so suitable for worker brood, than any deeper frames.

The deeper frame must have more wires, or one vertical wire, or sag renders many cells unsuitable for worker brood. Where queen excluders are used it is the writer's observation that they are no material hindrance, if very near the brood; in other words, if the capacity of the brood nest, during the flow, is such that the queen keeps it well filled with brood, but if the capacity of the brood nest is such as to leave room for much honey, after the queen has reached her peak of laying, then the excluder is a more marked hindrance. Where Jumbo or Dadant brood nests are adopted by users of the Langstroth frames, these frames will in most cases be used as supers, and the queen will too often go above, unless kept below by an excluder.

With the 6-inch combs, used by the Dadants, we know that the excluder may be quite well dispensed with.

The writer had hoped for much from the large, single-story brood-nests, but when men like J. L. Byer and F. Greiner state that they get identical, or nearly identical, results in honey from other hives, a change may be inadvisable.

Unquestionably, if a large, single-story brood nest can be used, up to the flow, without too much sacrifice of valuable points, a great saving of labor will result.

The writer is not opposed to the use of large hives, and for years past has wintered on 15 to 20 frames of standard size, but only wishes to point out some of the points to be considered, and warn against extensive, too extensive, changes until

H. C. Cook's fireproof storage house for combs in the City of Omaha.

such changes are warranted by definite, established facts.

Idaho.

We consider the above article of sufficient importance to give it a prominent place in this number. Mr. Atwater is one of the leading beekeepers of the West. His statement that, for years past, he has wintered bees on 15 to 20 frames of standard size is in the line of views expressed by the editor on "large hives."

He is also correct, we believe, in saying that swarm prevention cannot be secured by the use of large hives and abundant empty combs, ONLY. To fairly prevent swarming, "without special manipulations," we have several conditions. Young queens, few drones, large brood chambers in single stories, plenty of empty combs, spacing 1½ inches of frames from center to center, sufficient ventilation, shade. With all these requirements fulfilled we still have about 5 per cent of swarming. But if a beekeeper tries only a part of these requirements, or fulfils them when it is too late and the swarming fever has begun, he cannot claim to have given the method a fair chance.

There is no doubt that methods will succeed more or less according to the circumstances of the honey crop and the locality. But the following cannot be disputed:

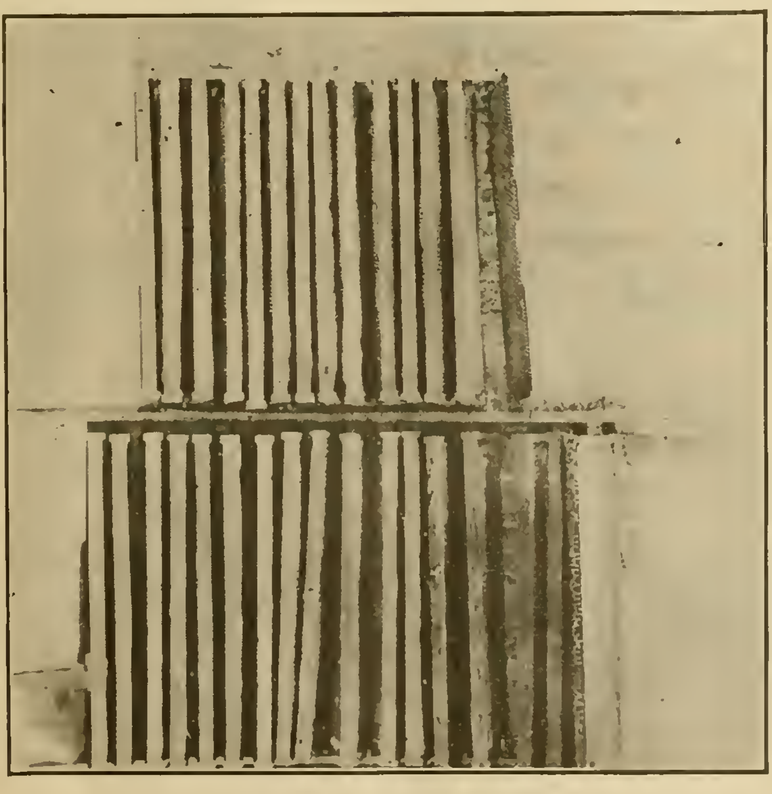
1. Bees do not usually try to supersede young queens of 2 years or less, during the honey crop. They do often try to supersede old queens at that time, and swarming results.
2. Drones are bulky, noisy, and in the way of the bees. A large number of them makes the bees uncomfortable, and swarming may result.
3. When the queen has to pass from one story to another to seek room for egg-laying, and also if she is hindered by queen-excluders, she is more or less annoyed, therefore more willing to swarm.
4. If the bees have to build combs to store honey in large amount, they are kept idle, hanging in the hive, and the consequence is an increased desire to swarm. They are often thought to sulk, when the truth may be that they are nearly full of honey from the previous day's harvest and must wait for wax to be produced, if the crop has opened suddenly. Then swarming is **sure** to come.
5. The spacing of the combs 1½ inches from center to center gives some 180 cubic inches, more or less, of additional room in the brood chamber, over the spacing of 1⅜, at the time when the hive is full of brood and swarming most imminent. No one can reasonably deny that the narrower spacing will induce more swarming.
6. The increase of space at the entrance to the point where all the bees can pass in and out readily is sure to make the bees more at ease and prevent swarming to some extent. It also gives chance for better ventilation and less swarming.
7. Shade, in hot localities, is important in the prevention of discomfort and therefore in helping to prevent swarming.
8. The above requirements should be fulfilled in ample time, before the swarming fever, else they are of no avail.

Mr. Atwater's statement that the 11-frame Dadant hive is none too large for brood is gratifying, for he is, as they would say, in a monarchy, "more royalist than the king." We believe the hive large enough, and our belief is based on some 50 years of comparative trial by three generations of the family in active beekeeping.

But we hasten to agree with him, that a change from the present standards of small hives and narrow spacing may be "inadvisable," and in fact we do not urge it. Beekeepers have produced large crops and made money with small hives, and will do so still. It is a pleasure, however, for us to read that "if there were no standard spacing," Mr. Atwater "might prefer the wider spacing."—C. P. Dadant.

## A Fireproof Storeroom for Combs

H. C. Cook, a beekeeper in the city of Omaha, has a novel plan of caring for surplus extracting combs when not in use. The picture will give a good idea of the nature of the building. It is round and at first glance looks like a small silo. It is made of concrete and is fireproof. Since the building is tight it is an easy matter to fumigate big stacks of combs after placing them in the building to kill any moth that may be present. The building is ten feet across and ten feet high. On the walls are racks for holding the combs, as shown in the second picture. These racks hold 2,400 combs. In addition to the combs in the racks, supers filled with combs are stacked up on the floor so that the capacity of the building is ample for one apiary of about 100 colonies which he keeps on his city lot. Since Mr. Cook erected the building himself, with the help of an assistant, the cost was not large. He feels that it is an excellent investment, since all his extracting combs are thus kept safe from fire and from moths.



Comb racks in Cook's store house.

## The Disappearing Disease in Texas

By H. B. Parks

ABOUT the middle of August a strange and severe malady made its appearance in the bee-yards of southeast Texas. The area in which this trouble occurs extends from Travis County southeast to Live Oak County, and southwest to Dimitt County. A large number of beekeepers have reported that the disease suddenly broke out in their vicinities and that almost every apiary was affected. Those reporting coincide in their description of the disease. When first noticed the bees were rushing from the hives and most of them were unable to fly. These would crawl along the ground, seemingly in great distress, and congregate in groups. There they would move around as if in great pain until they finally died. A large number of bees, especially those newly emerged, die and fall to the floor of the hive in such numbers that they clog up the entrance. Many also report that the disease causes the death of the young larvæ. Where a hive is afflicted with this trouble the emerging brood uncap the cells, and if they have strength enough to come out they seem to be deformed and die before they have spread their wings.

A few have reported that the queen is among the first to die. Many now connect this disease with the fact that this year it has been almost imposible to keep queens in the hives. Some of the older beekeepers state that so far as they can remember, there never before has been so high a death rate among the queens.

The bees which died from this disease have a slightly swollen appearance, somewhat similar to paralysis victims. The bees are found covered with a gray fungus, or mould, in about forty hours after death. This fungus comes from all of the exposed soft parts of the bee's body, and especially from the segments of the abdomen and around the mouth parts. Whether or not this fungus has anything to do with the disease, is not known. As is customary, whenever a bee trouble appears, many are ready to suspect that the bees are suffering from poisoning. A large number of plants are suggested as being responsible for the trouble. As usual, dodder, being a plant already suspected of being poisonous, heads the list. A significant fact is that of all the plants suspected, a large percentage are heavy pollen producers. Dodder, **Cuscuta campacta Juss.** (and other varieties), and Partridge pea **Cassia Chamæcrista L.,** are the only honey plants that are reported as being in bloom in the affected region. It seems very peculiar that such a thing as a plant producing nectar poisonous to bees would exist, as nature would be defeating her own purpose in having nectar secreted to attract insects, which are to act as carriers of pollen and then to have the insects killed by the nectar before they can deliver the pollen. One can hardly believe that poisonous nectar is the cause of the present trouble.

In the Journal of Economic Entomology for August, 1918, Elmer G. Carr describes a summer disease that occurred during the summer of 1917 in New Jersey, New York, Ohio and Ontario. Later the disease was reported as occurring in Mississippi and Alabama. C. P. Dadant, of the American Bee Journal, in an editorial in the December, 1918, Journal mentioned a similar occurrence in one of his own bee-yards in Illinois. Mr. Carr suggested that this malady is caused by an excess consumption of pollen, and, in his article, shows that the trouble occurred during or just after a period of stormy weather, when but a few honey plants were in bloom, and a large number of pollen plants were blooming plentifully. He further reports that the hives affected had a superabundance of pollen and an unusually small amount of unsealed honey. The theory he advances is that the bees, during the period when there is no honey-flow and an immense supply of pollen, feed too largely upon the pollen, as bees are very reluctant to consume sealed honey during this period.

The close relationship which exists between pollen and this disease becomes very apparent after one has read the article in the June, 1919, Journal of Economic Entomology by Arnold P. Sturtevant, in which he describes this disease and states that while searching for Nosema apis he discovered only pollen granules in the digestive organs of the dead bees. This leads him to make a number of statements, among which two are significant: "Such materials as starch and dextrin are indigestible to bees, causing what might be called acute indigestion or auto-intoxication. Therefore, the presence of so much indigestible starch in the pollen food of the bees was probably a contributory factor, if not the actual cause, of the dysentery and death of so many of the adult bees, in the particular instance cited."

Under the title "The Disappearing Disease," an editorial in September Gleanings, gives an account of the outbreak of this disease in California, Washington and Oregon, in the spring of 1917, in the Eastern States.

The conditions described by Carr, and again by Sturtevant, seem to be identical with those now existing in Texas. In sections where during average seasons there is a lack of pollen for fall brood-rearing, this year some combs are solid bee-bread. From the statements of Dadant and Carr, this disease disappears with the same rapidity with which it came, whence its name, the "Disappearing Disease," but necessarily the colonies which are dead cannot be replaced easily, and those which have been severely weakened by the death of their members will have to be handled with a great deal of care to have them retain their strength. As the best evidence indicates that this disease is caused by the overeating of pollen, it has been suggested that the feeding of sugar syrup or the breaking of the caps on the sealed honey should help materially, as either treatment will cause the majority of the bees to gorge themselves with syrup or honey.

In all of the instances cited above, this disease occurred during the spring and summer, and between honey-flows. As the Texas outbreak has occurred during the latter half of August, some may think that these maladies are not identical. One must remember that, throughout the southern half of Texas the summer is divided into two seasons; spring and early summer compose one of these seasons. The honey plants reach the height of their blooming by the first of June; by the middle of July there are but very few flowers in bloom, and brood-rearing reaches a very low ebb. By the middle of August a change comes, by which the fall-blooming plants, which produce pollen in abundance, and strong-flavored honeys begin to bloom. With the coming of a few rains, the fall flowers bloom in abundance, and the bees again store considerable nectar. It was just at the opening of this season that the outbreak of "The Disappearing Disease" occurred; thus we have a coincidence in seasonal relationship, in the behavior of the bees, and in the condition of the hives, and every beeman in Texas hopes that it will also disappear quickly here.

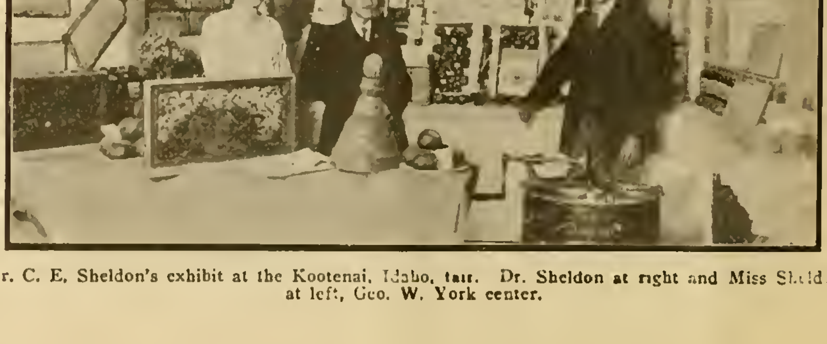
College Station, Texas.

(We suggest that the mould or fungus mentioned in the above contribution be investigated. See translation upon this subject in the September number, page 305.—Editor.)

## How Many Trips to Fill a Cell?

By C. E. Fowler

I HIVED a swarm of bees Monday morning, 11 pounds, or about 40,000 bees (full of honey). I used three 10-frame supers of foundation, 27 cells to inch, 4⅝x16¾ in., or about 4,000 cells to each frame—120,000 cells in all. In four days they drew all the foundation out and filled one-third full of honey (33 lbs.), allowing 10 pounds of honey for 1 pound of wax, and estimating the wax made at 1 pound, which is very low for the supers, and supposing one-half the bees remained in the



Dr. C. E. Sheldon's exhibit at the Kootenai, Idaho, fair. Dr. Sheldon at right and Miss Sheldon at left, Geo. W. York center.

hive. This is a guess from observation. Then 20,000 bees gathered 20 pounds of honey in two days, or 2,000 bees gathered one pound of honey in one day. If they made ten trips each day it would take 20,000 trips for 1 pound of honey. Then two bees filled one cell each day. The answer is, guess at the number of trips per day, then multiply by two, and you have the number of trips required to fill each cell.

If each two bees made 5 trips each day, each cell would hold 10 trips. The honey in each cell weighs as much as 5 bees.

If each bee brings one-fourth her weight in honey, then it would require 20 trips, each bee making 10 trips each day to fill one cell.

If my swarm had 20,000 field bees and each one made 10 trips, that would be 200,000 trips each day, 20,000 each hour, 333 each minute, or 5 each second.

I think this is as near as you can come to it without actually counting the bees for a whole day.

New Jersey.

## Wiring Frames

By J. E. Crane

SOMETIME last winter or early spring I wrote for the American Bee Journal in regard to wiring frames to prevent sagging.

From the number of letters received from different persons, I have come to think the subject is one of more than ordinary interest. In the brief article referred to I did not go very much into particulars, but stated in a general way that the wiring should be where the most danger of sagging came. Since that was written I have had opportunity to examine many hundreds of wired combs, I think I might truthfully say thousands, and observe the results of the many different methods of wiring. In inspection work we meet with all kinds of wiring; besides, we buy a good many bees in the spring. And then we have our own, where we changed the method of wiring as we gained experience.

We have found frames strung loosely with two wires placed near the middle of the frame. Some with three wires, the upper one perhaps 2 inches below the top bar, and so on down, about 2 inches apart. Others with 4 wires, starting 1½ inches below the top bar, while still others with 3 and 4 wires, starting from three-fourths to an inch below the top bar, those below being placed about 1½ inches apart. I have just measured a factory-made frame and find the upper hole for wiring three-fourths of an inch below the top bar, while the next is 2 inches below the first; the third one three-fourths below the second; the fourth the same distance below the third. There seems to be no fast rule for wiring, and everyone does it as seems good in his own eyes. I believe, however, most factories bore the holes so the wires will come about an equal distance apart.

We make our own frames and place the wires where we like them, and by so doing have learned where they are most likely to prevent the sagging of the combs and the building of drone-cells.

There are conditions where ordinary wiring will not prevent sagging and an overheated hive is one of them. I had, years ago, a comb built from Van Deusen's flat bottom foundation, the wires about 1 inch apart and running up and down instead of the modern horizontal way, that became so soft from heat that it slipped through the wires and all went to the bottom of the hive; yet I was examining a comb a year ago built on this kind of foundation and wired in this way that had been in use 40 years and without a particle of sag in it; the cells near the top bar as sound and perfect as those near the bottom. Mr. Poppleton, who kept bees so successfully for many years in Florida, used a comb about one foot square, and coated the upper part of the frame of foundation with melted wax to prevent sagging instead of wiring; yet I noticed that many of those combs had settled down badly. Years ago I had a foundation mill made by Mrs. Dunham, and I made my own foundation. Four sheets for Langstroth frames would weigh a pound. I thought combs built on this foundation surely would not sag, it was so heavy; but it did, and badly, without wiring. Most extensive beekeepers have adopted the horizontal wiring of frames as the simplest way to prevent the sagging of combs and the consequent building of drone-comb, and how far from the top bar and how far apart these wires shall be is a question of much importance. I find where but two wires are used near the middle of the frame, sagging is as bad as where no wire is used. Where three, or even four, wires are used and the upper one two inches below the top bar, we are almost sure to find a streak of drone-comb an inch or an inch and a half wide above it. If the upper wire is placed one and one-half inches below the top bar I still find some sagging of the comb above it and more or less drone-comb. If the upper wire is three-fourths to one inch below the top bar and the next one below not more than one and a half inches below the first, it is rare, indeed, that we find any sagging or drone-comb built below the top bar.

We now use but three wires, and by placing them well up to the top bar we have practically no trouble. If I were using four wires I would place the upper one three-fourth of an inch below the top bar, the next one inch below the first; the third one and one-fourth inches below the second, and the fourth one and one-half inches below the third. This would leave the lower three inches of foundation without wire support, but I have never known this lower part to stretch, whether wired or without wire. We have our foundation built out quite largely in supers; that may make some difference, but a new comb weighing six or seven pounds is a pretty severe test.

## Workers or Loafers

### A Bee's Daily Trips

By Arthur C. Miller

THE editorial in the September American Bee Journal on the "Daily Field Trips of a Worker" was of particular interest to me, as the results secured by the Holstein beekeeper so closely corroborated observations on the same subject made by me about 1905 and reported in the American Beekeeper. Shortly after, Dr. Burton N. Gates, then a student at Clark University, Worcester, Mass., to prove or disprove my findings, undertook similar observations there. The work was directly in charge of Dr. Kuhlmann. His observations showed from 4 to 8 trips a day, an average of 6. Mine had been the same. In both cases the bees were working on natural sources in the fields. When working on artificial food, either syrup or diluted honey, the results are abnormal, the bees showing a feverish haste and activity.

As to the time the bees remain in the hive between trips I found quite a variation, sometimes but a short time elapsing between trips, but usually quite a long time. The field bee often went into a cell, sometimes one containing an egg and sometimes empty, and would lie there inert for often a half hour or more. While thus "resting' the bee was very quite, the pulsations of the abdomen often ceasing for a long time and then resumed very slowly. when such a bee "awoke" she would back hastily out of the cell, rub her forelegs over her head for all the world like a sleepy small boy rubbing his eyes, and then she would wander on, sometimes hasten over the combs and sometimes out to the fields, or else go aimlessly about the hive.

While the bee was in a cell with an egg she never touched the latter in any way. And by the way, it is not generally known that bees often, if not usually, in a heavy flow, put freshly gathered nectar in cells containing eggs, later removing it, and it in nowise interferes with the hatching of the eggs.

These observations were made in my glass hives where the cells are parallel to the plane of the glass, so that cells next to the glass have one side of glass, and all that goes on within them is readily seen.

Providence, R. I.

## New Man at Minnesota University

Mr. G. C. Matthews, of Filer, Idaho, on September 1, commenced his new duties as Assistant Professor of Bee Culture at the University Farm, taking the place vacated by L. V. France, who on July 1 began his new duties as Research Assistant in Entomology at the University Farm, his problems being to work out the responses of bees at different periods.

Mr. Matthews has been in the bee business for fifteen years on an extensive scale. Aside from being a beekeeper he is a public school teacher. He was educated in the Western Illinois Normal and the University of Illinois. Last year he was superintendent of schools at Camp Point, Ill.

During the winter of 1917 and 1918 he was Special Agent, U. S. Department of Bee Culture, Washington, traveling over Wisconsin and Minnesota. Mr. Matthews started beekeeping with M. A. Gill, of Colorado, with 1,000 colonies. Later he went to Utah and managed 700 colonies; he was also manager of the Superior Honey and Supply Co.

In 1912-13-14 he was in business at Idaho Falls, Idaho, from where he shipped seven carloads of bees to California, Utah and Idaho, rearing the major portion of the queens for the entire outfit. Later he established a business at Filer, Idaho, with 800 colonies that were shipped from Colorado, and has since been there and teaching school during the winter months.

## Beekeeping in Japan

By Kennith Hawkins

Add to your problems that of such heavy rains as to prevent good honey flows in many localities and to necessitate the construction of special waterproof hive covers, and you will get a glimpse of Japanese beekeeping. These problems are explained in a most interesting letter just received from Yasuo Hiratsuka, of Tara, Gifu-Ken, Japan.

The apiary owned by Mr. Hirasuka is located in the central part of Japan, where the bees begin breeding up by the latter part of February, in a normal season. The principal honey flow comes from "Genge," or Japanese clover, which begins blooming about April 20, and lasts until well into June. The swarming season is also coincident with this flow, as in the white clover regions of America.

In many localities there are earlier flows from rape, about April 15, which change to some extent the swarming season of the Japanese beekeeper. According to Mr. Hiratsuka, in the mountainous portions of Japan, chestnut and persimmon are important sources of nectar, as in Virginia of our own country. He adds, however, "under normal conditions these will not do so well, because of a long rainy season at the same time." After the Japanese clover flow in his own locality, there is no other surplus flow that season, he says.

A number of labels for his honey containers, printed in English and Japanese are included with his letter. American style hives and supplies are used in Japan, says Mr. Hiratsuka, except for the covers. As shown in one of his photographs, the hive covers appear to be augmented for shedding water by roofs of matting. flat covers are never used. He likens his season and conditions to Alabama of our own States, except for shorter flows. Much interest is expressed in beekeeping in America and in literature on American beekeeping, which has been sent to Japan.

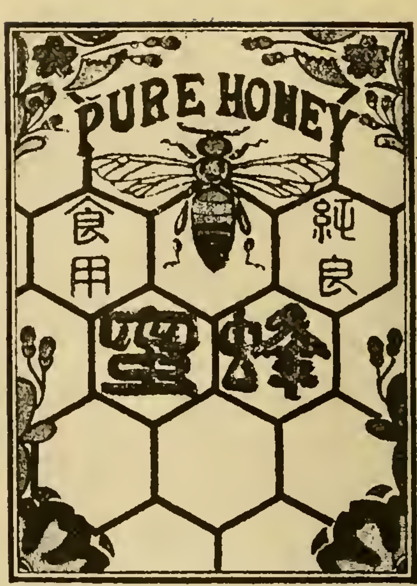
Watertown, Wis.

## New Course at Iowa College of Agriculture

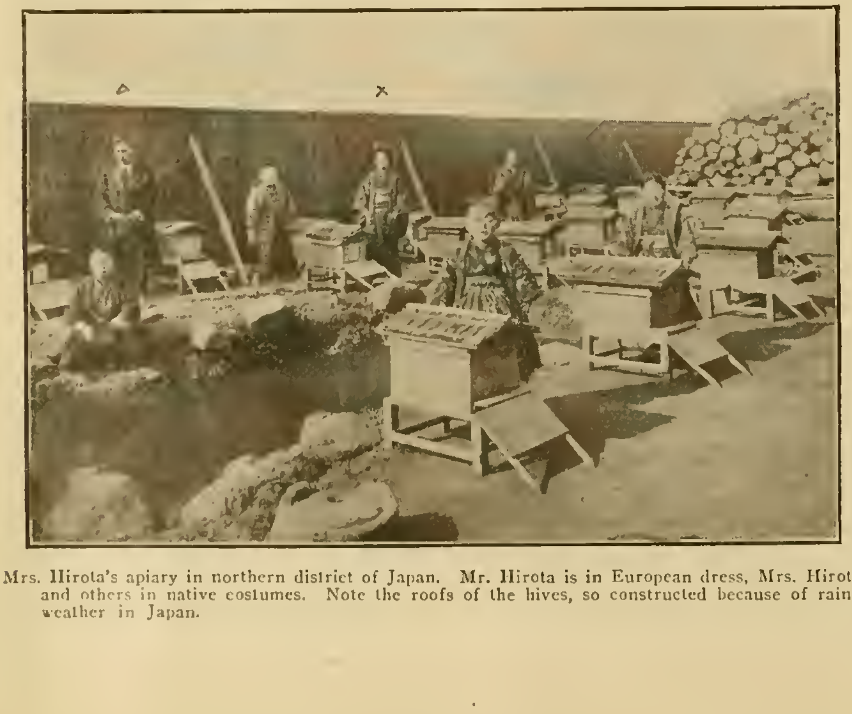
The beekeeping work at the Iowa Agricultural College is being expanded as rapidly as circumstances will permit. A new special course has recently been announced, which provides for combination work in practical beekeeping, poultry husbandry and fruit growing. Each department offers choice of a general course or a special course for a period of three months. Each course is divided into two parts of six weeks, so that the student who is unable to spend the entire three months at the college at one time, may take the first half one winter and finish the next year. The general course is repeated at the end of six weeks, while the special course continues for twelve weeks.

A correspondence course in beekeeping will be offered again this year, as usual, and arrangements are about completed for an advanced correspondence course, for those who have completed the first one.

Boys and Girls Bee Clubs will be formed in several counties in Iowa this year. It is the intention to make the club work very practical and to supervise it closely to make sure that every member understands fully the fundamental principles of practical beekeeping. Professor Paddock has not been long in his new position, but he is very active in carrying out the liberal program which the college has under way. With three men on full time in the beekeeping work at the Iowa institution, we expect to see beekeeping rapidly taking rank with other specialties there.



Honey label printed in Japanese and English.



Mrs. Hirota's apiary in northern district of Japan. Mr. Hirota is in European dress, Mrs. Hirota and others in native costumes. Note the roofs of the hives, so constructed because of rainy weather in Japan.

## Beekeeping in Costa Rica

W. B. Gehrels.

AFTER having made an extended visit to Cuba, Panama and Costa Rica the previous December and January, visiting and inspecting some important apiaries and taking general notes on bees and beekeeping, I decided to move to Costa Rica, which country I thought offered the best possibilities for the production of honey of those I had seen.

I sold all my bees in Texas excepting 8 colonies, which I reserved to bring with me, intending to buy common stock after my arrival here, using the 8 colonies as stock to breed from. Freight rates to these countries are high, and shipping space could only be had at times, and then only as a favor.

The colonies were reduced to three good frames of brood with bees, and just enough honey for the trip, filling the balance of space in each hive with empty combs. I reduced the colonies in bees and stores as a precaution against losing them by smothering, as the weather was very hot. We left Texas June 10. Two of the colonies were dead when I examined them on arrival in New Orleans, evidently caused by stacking other express matter over them, or leaving them in the sun.

I had each colony plainly marked in large letters, "keep out of the sun" and "do not cover the screen."

The steamship company would not accept any freight or express matter for this trip to Costa Rica, only for Panama, which made it necessary for me to store 20 cases of household goods in New Orleans, to be shipped on a later boat. But the company finally consented to take the 6 colonies of bees along for me as baggage, and I to look after them personally, which was very kind of them. I had paid them $600 for passage money for my family and myself. The bees were placed on the deck of the steamer under a canvass that was put up to protect deck freight from the sun and rain. I watered them every day, and they fared well until we arrived at Cristobal, Canal Zone. Here the steamer tied up at the north side of a pier for 3 days to discharge 3,000 tons of cargo. The canvass that shaded the bees was cleared away. The mate gave me a small piece of canvass, and by propping this up with a few pieces of old lumber, I put up a temporary shade and moved the bees to the bow of the boat, but it was almost unbearably hot, and how any of the bees survived the three days' stay in Cristobal is a mystery to me.

Finally the ship's hold was emptied of cargo, which was a relief for several reasons; we would soon be out on the high seas again, where it was cooler, and as we passed an occasional thunder storm we did not relish living over a cargo that contained coal oil, gasoline and ammunition. Most of the passengers were also discharged at Cristobal. Mr. Pullen, United States Consular Agent to Costa Rica, also a native of our State, was the only passenger besides us that came all the way. On the following day we arived at Limon, Costa Rica. The fringe of cocoanut palms along the beach, the white houses, the tall wireless tower of the Fruit Company, with the dark green mountains for a background, made a beautiful picture. Our steamer anchored out in the Road, and did not go up to the pier, as they had no freight for Costa Rica. The bees, mail and other haggage were lowered from the deck of the steamer to a barge by means of a large net made out of ropes.

Before leaving Cristobal I had purchased 10 pounds of cut loaf or domino sugar to feed to the bees in case they would need feeding before I could open them up at destination. This food was useful, as three of the colonies ran short of stores. I fed this sugar by dipping each cube in water and placing on the screen.

We got everything ashore and through the custom house, and took the train next morning for San Jose, shipping the bees by express. This government did not charge us any duty on the bees. The weather was not as hot here as in New Orleans, or in Texas when we left, nor was it as hot as in Cristobal. This may have been caused by the abundant rains that were daily falling in Costa Rica. In a few hours we were in a delightfully cool climate as the train climbed up to higher altitudes through the mountains, following the winding course of the beautiful Raventazon River.

Before taking up the bees again I wish to say a few more words about the beauty of Port Limon, and the trip to San Jose, up the Raventazon valley. A person never grows tired of this trip, no matter how many times he makes it. On the night of our stay in Limon we went to the park and heard the military band play. The park is laid out with walks over-arched with many tropical vines and plants of rare beauty; flower-covered bowers shade seats where you can be comfortably seated and enjoy the music or listen to the murmuring waves of the sea, between the pieces of play. The air is laden with the fragrance of orange blossoms and other flowers near by. The royal palms of this park are the most perfect and beautiful that I have ever seen, and the plants with foliage variegated and spotted, in all the colors of the rainbow, are an admiration to all travelers.

When the train leaves Limon, it follows the sea in a northerly direction, through an avenue of cocoanut palms, as it were, for 15 miles or more, now and then stopping in a picturesque village, inhabited mostly by Jamaica negroes, who seem to be the main laborers on the banana farms. The Jamaica negro, like his cousin in the States and elsewhere, loves color, which is evident by the bright dresses the women wear. These women meet the trains with all kinds of fruits, cakes and strong-flavored peppermint candy, which they sell to passengers.

After leaving the sea coast the train plunges straight into the jungle, but not for very long; soon you pass one of the largest banana farms in the world, also some large plantings of cacao, the tree that produces the chocolate beans. At Siquirres the train stops 30 minutes for lunch. This is a banana junction, the railroad branching into several directions to large banana districts. The extent of the banana business may be judged by the fact that they handle as many as 20 trainloads of bananas, through this junction in 24 hours, at times. After leaving this place we begin to ascend the mountains in dead earnest, and the grandest scenery greets the traveler at every turn.

We could now feel the air getting cooler all the time as the train puffed and pulled up the steep grades. I saw the bees in the express car; they were not suffering from the heat now, and seemed to enjoy the change as we did.

About 3 p. m. we reached Cartago, the old capital, which was destroyed by an earthquake six years ago. The active volcanoes, Irazu and Poaz, can be seen from the car window. This is quite an important place and produces fine fruits and vegetables, and coffee. At 3:40 p. m. we were at San Jose, the present capital of Costa Rica, which was our home for a while. San Jose is a very old town. It has good hotels, fine shops and stores, and many places of interest. Both this place and Cartago have the most delightful climate and spring weather all the year round. A woolen blanket for covering at night, and an overcoat after dark are comfortable during the rainy season.

We were met at the station by a friend whose acquaintance I had made on my former visit to this country. He acted as a guide, which was not amiss to us in a strange land, among strange people, whose language we did not understand yet. Our good friend could speak English. He had a flower and vegetable farm at the outskirts of the city, where he requested us to take our bees until we could find a suitable place to get settled. We gladly accepted his offer and took the bees to his flower garden and opened them up. They had

The largest apiary in Costa Rica is under these cocoanut palms. The trees are over 75 feet high and one has more than 100 cocoanuts on it.

now been closed up for 14 days, and the way they came out was funny to watch. Some acted very stiff and were unable to fly at first. Two of the colonies proved almost dead and one was queenless; but with the help of a little feeding they all built up into strong colonies in a short time, and the queenless one reared a queen. After being opened, some brought in pollen in less than 10 minutes There was an irrigation ditch with clear, cool mountain water a few feet from the bees. They were now in a veritable bed of flowers, but we fed them several times during the first month, as they started rearing brood heavily, and there was very little nectar. It rained most of the time, and every day.

(To be continued).

## Hunting an Apiary Location

By J. F. Diemer

SEPTEMBER 8th my wife and I left Liberty, Mo., in our Henry Ford for a trip through northwest Missouri, to visit beekeepers, see the country, look up some locations, and feast our eyes on the wild flowers that grow in profusion along the highway.

The first town, the first beekeeper, and the first good location, we found at Smithville. Very few bees and plenty of wild flowers and pasture land, with an abundance of native forest trees for early pollen; also considerable bottom land for fall flowers. The only beekeeper, with a dozen colonies, and his poor system, doesn't furnish enough honey for three families.

From this place we followed the Jefferson highway north and east, and along the road there seemed to be no end to Spanish needle, heartease and other wild flowers. Bees would do well anywhere along this trail. There is no telling the number of tons of the delicious sweets that waste for the want of beekeepers and bees to gather it.

This season was an extra good one for fall flowers. White clover does well when they have it, which is only about two years in five.

This part of Missouri is nearly all upland and excellent soil for a hundred miles; but don't compare with the splendid locations along the Grand River bottoms.

Buckwheat flour is the principal ingredient of the pancakes my wife makes for breakfast, that look so tempting and comfortable under a thin coat of 75-cent butter, and a thick coat of Spanish needle or yellow flower honey.

This yellow flower, as it is called in Daviess and other counties, is a wonder when it comes to producing not only a high grade of honey, but the main fall honey in this part of the State. There is one very serious fault with it, and that is that it does grow in Clay County, where my bees are. But, as M. G. Dadant well says, if the flowers won't come to my bees, I can load them on a truck and take them to the flowers. Some folks up here call it the little sunflower. The leaves are a little like the sunflower, but the bloom is more like the Spanish needle. It has four points or stickers on one end of the seed, and the Spanish needle has only two. (Bidens bipinnata L., probably.—Editor.)

Buck-brush, one of our best honey plants, blooming about July 20, is especially welcome when the white clover fails, as it did this season.

Irving E. Long, at Marcelline, told me that his scale colony gained 270 pounds between Judy 29 and September 20. Mr. Long is a farmer, but does not neglect his bees, and usually gets a crop if anyone does.

We stopped two days at J. F. Barton's, Coffey, Mo., while resting and eating old country ham, fried chicken, etc. I helped extract one day and we introduced 13 queens. We put in one day visiting farmers that had all the way from one to 25 colonies, all of them run for section honey, which sold for 35 cents per pound. Mr. Barton runs for extracted honey, and sold it readily for 30 cents. He can sell more honey in a short time than any beginner I ever knew. He doesn't peddle it, either; people just come in and get it. The reason was plain enough—everybody in that whole country is Barton's friend.

The smile that won't come off. Mr. and Mrs. Conaway entertain Mr. and Mrs. Diemer.

From here we headed toward Bigelow, Mo. The distance, as a crow would fly, is about 100 miles, but because our Henry Ford couldn't fly, we had to go 150 miles, and because we went cross lots instead of following a well-marked trail, of course we got lost; and believe me, we had some hills to climb, half pitch and a mile long.

Once in a while we would run into a bee patch on a farm, just a few colonies with a thirty-pound rock on top of each. It is a good plan, for there would not be much weight without the rock. One little lone super for each hive; the sections looked like they had been used for nine years without starters.

Some of these beekeepers will have to unlearn a whole lot of things they know, before they can begin to learn the things they don't know, and I would like to meet the man that could get them to attend a beekeepers' meeting, clean up foulbrood, or modernize their outfit.

G. A. Conaway lives in Bigelow, and he is the principal honey producer in this part of Missouri; everything up to date, including a four-frame extractor run by electric motor. The electricity is furnished from Mound City and is used for electric lights in the homes at Bigelow. But it seemed to me that Mr. Conway used the most of them, as he had lights all over the place where he could think a light was needed. He has an outyard at the big lake five miles from home. This lake is crescent-shaped, full of fish, and a roadway runs clear around the lake a distance of ten miles. We got so interested in the lake that we almost forgot to look at the beeyard. But some of his hives were as tall as a man, and full of honey.

Mr. Conway has 55 colonies at the home place, tends to both yards himself and does most of the extracting after dark. He is agent for the Burlington Railroad at Bigelow, writes a full page each week for the county paper at Mound City, looks after other people's bees that don't know how, keeps a complete record of eacn colony, keeps two typewriters, one at the office and one at his residence, has a large correspondence, seldom fails to get a big crop of Conaway honey, and sells it all to the consumer direct. He has plenty of time to take in all the good shows and other social affairs, including fish fries at the big lake. While we were there I couldn't decide which he liked best—to work with his bees, or eat the good things Mrs. Conaway prepared for him. He certainly is a good feeder, and a good worker, and has more time to play than most folks.

We ate breakfast at 5 o'clock. Mrs. Conaway gave us a lunch that nearly filled a half bushel basket, and we started for Liberty. Arrived home the same day, feeling that our six days off were a good investment.

Missouri.

## The Washington Short Course

In all, 118 registered for the course, many of them were from quite a distance. Fifteen counties in Washington were represented, three in north Idaho and two in Oregon. Many were there from the Cascades, and three from Vancouver, B. C.

Between 9,000 and 10,000 colonies were reported by those present, with a production of close to half a million pounds of honey for the past season.

Dr. E. F. Phillips took up the behavior of bees, beginning with the fall, and carrying them through the year to the end of the honey flow the following summer, and explained in detail the behavior of bees under favorable and unfavorable environment, and the management worked out and proven best by their experiments at Washington.

Mr. George S. Demuth followed Dr. Phillips, each session, on beekeeping practices, and in his clear, logical way gave the cream of all that their investigations have proven to be the best practices.

Mr. Sturtevant gave a perfectly wonderful course, beginning Wednesday with the Bacteriology of Bee Diseases, following up with the diagnosis and treatment. His descriptions of the brood diseases and minute detailed comparisons were so clear that it would seem almost impossible to make a mistake in the gross diagnosis at home.

Mr. Scullen, Field Agent in Washington, talked mostly on general conditions and practices in Washington and, on Friday, gave a talk on the distribution of disease, illustrated by chart. Washington beekeepers are fortunate in having such a live wire as their Field Agent.

On Wednesday evening we enjoyed a bountiful dinner at the M. E. Church, followed by a very fine lecture by Demuth on the Evolution of Beekeeping Practices.

Thursday evening we were given a rare treat by Dr. Phillips in the shape of a stereopticon lecture, "Visiting With Beekeepers." He took us all over the country, even to Porto Rico and Honolulu, and introduced us to some of the big beekeepers of the past and present, not forgetting Dr. Miller, whom we all love so dearly, though few of us ever had the pleasure of meeting him. The applause was instantaneous when he appeared upon the screen.

Beekeepers can't afford to miss this course. It is worth many times its cost to beginner or big producer, and it is worth going a long way to hear.

This is not the opinion of the writer alone, but the voice of practically every man and woman present. Such expressions as, "I wouldn't have missed it for many times the cost," and "Any single lecture is worth the trip," etc., were common.

At the close of the course a resolution was read by Dr. Harmeling, of Vashon, thanking the "Three Wise Men from the East," and also the Commercial Club for the use of the club rooms. Then each of the instructors was presented with a little token of remembrance from the enthusiastic audience.

DR. CHARLES E. SHELDON.
Coeur D'Alene, Idaho.

## Winter Feeding

By A. C. Miller

THIS is a problem now confronting many beekeepers, if one may judge by the numerous inquiries as to where to get sugar, and the best way to supply the food.

**Don't** give them **syrup,** now nor any other time after they have settled into their winter cluster. First, it is difficult to get the colony warmed up enough for rapid work; second, it is difficult and expensive in labor to get the whole interior of the hive sufficiently warm so the bees can store it; third, the moisture given off condenses on all cool surfaces and makes the interior of the hive damp; and fourth, and most important, it puts an extra strain on the vitaliy of the bees when they can least spare it.

Even if by means of hot bricks, jars of hot water, etc., the hive is so warmed that the bees break cluster and spread out as in summer, it is difficult to maintain the heat long enough to enable the bees to get all the syrup properly stored, and still more difficult to let the temperature down so slowly—a matter of days—that all the bees can get back into a cluster. Even if all this is accomplished, brood rearing is also started and will keep up indefinitely, and this in itself is most harmful to the colony.

If your bees are packed as thoroughly as advised by Dr. Phillips, you may be able to feed syrup, but at the expense of much labor to yourself and also start brood rearing.

Candy is the safest and most economical way to feed bees in cold weather. Also it is much less laborious than any system of syrup feeding. Forget all about the elaborate receipts for soft candies and make the simplest sort of hard candy, using pure granulated sugar.

Like the famous receipt for rabbit pie, "first catch your rabbit," so first get your sugar. In most of the New England States the State Agricultural Departments are securing sugar for beekeepers, the latter writing in their requests to the Secretary of the Board of Agriculture, stating how many colonies they have, how many need food and how much sugar is needed. Unfortunately, in most cases the authorities have been so late in getting it that it is too late to feed it in the syrup form.

To make the candy, melt up the sugar with as little water as possible, just enough to keep the sugar from scorching, boil it until a little dropped into cold water chills into a hard lump, and it is done. If you are not skillful at it, get your best girl to do it for you, be she wife, sister or sweetheart. If you have neither of these, poor chap, borrow one for the occasion.

Pour the finished candy into shallow cake or bread pans, filling them to within one quarter inch of the top. Do **not** grease the pans, because it is desirable to have the candy stick to them. Cheap pans one-and-one-half inches deep, are excellent.

As soon as the candy is hard it is ready for use. For best results in getting the bees started on it, pour onto the surface of each cake of candy a few drops of warm honey and with the fingers, or any convenient thing, spread it over the surface of the candy. Invert one or more of the pans of candy on top of the brood frames and cover up with plenty of packing. The bees will soon cluster against the under surface of the candy and slowly lick it away. It does not create undue excitement in the bees nor start brood rearing.

The reason for leaving the candy in the pans is to prevent the access of moisture to the tops and sides of the cakes, where it would be absorbed, softening the candy and perhaps making it run down among the bees, often with fatal results. Such moisture as collects on the under surface is licked away by the bees and is an advantage.

The foregoing described candy and

The Diemers visit Conaway's apiary.

its manner of use has been tried many seasons and by many beekeepers, and has proved good. It is particularly good for use in helping out colonies which are short of stores through heavy breeding or on account of a prolonged storm in the midst of the early nectar flow.

Try it. But be careful never to scorch the candy, such can sometimes be used in late spring, but always at a risk, while in winter scorched candy or syrup is fatal.

Rhode Island.

## A Letter From Algeria

(Translated from the French)

Algiers, June, 1919.

Dear Mr. Dadant:

Our honey season is now at end, for we are in the hot days, and the bees will get nothing except in the Eucalyptus region, but this is exceptional.

The Punic bees, which I see discussed in American Bee Journal, are the bees of North Africa, very probably brought from Europe at the time when Gibraltar did not have a sea passage; or perhaps imported across the Mediterranean. They are just as described by Baldensperger in the American Bee Journal of November, 1918, page 375. Those bees are very similar to the common bees of Europe, very prolific, but very cross, and one cannot handle them without smoke. They are very vigilant and the least noise stirs them to action. The proof that they can hear is in the fact that we have been unable to pull weeds in front of the hives without causing a revolution. It would have been worse had we tried to use a hoe. They make excessive use of propolis to guard against their numerous enemies, and with the hives used here commonly they need to accumulate a great deal of it. Anything is acceptable to them, from grafting wax to half dried paint.

Your magazine is exceedingly interesting and I see translations from it in . . . . . but their translator is like the interpreters we used to have in Algiers who belonged to one of 3 kinds: 1, the ones who knew French but not Arabian; 2, the ones who knew Arabian, but not French; 3, the ones who knew neither Arabian nor French, and yet tried to explain both. It is to be hoped they will do better. (We have mentioned this in our September editorials.—C. P. D.)

We have sent you our last Annual Report for 1919, "Nahhla". I call your attention to the deliberations of a city council which holds that bees deteriorate fruits by removing their flavor from the blossom. I had not yet seen such an argument against beekeeping.

The Lord made man in his own image and Voltaire said that man returned the compliment by making a God according to his own fancy. So Europe colonized America and it is now time for America to return the favor, by colonizing Europe and Algeria that are badly in need of suggestions and example.

My attempts at rearing the Magribine bees (see American Bee Journal, October, 1917, page 341) has not been successful. Magrib-el-aksa means "far west," so they are the bees of far west Africa.

I depended upon a friend to secure them, but through his neglect, the 4 or 5 fine queens that he secured were killed by ants. I will try it again and will send you some if I succeed, as soon as the postal facilities are again normal.

I am more and more convinced that bees do hear. But I am also satisfied that they do not readily distinguish white from the sky. I have seen bees fly against a white wall in the sunshine. (A similar experience, with photo, was given in American Bee Journal, February, 1919.)

I believe that is one reason why they are less aggressive to people dressed in light-colored clothes than to people dressed in dark or black clothes.

The high price of honey is helping beekeeping very much. Our people have been slow to take to the use of full sheets of foundation, but one of our leading apiarists stated to me that he harvests much larger crops since he is using full sheets of it, on account of the lessening of the number of drones produced. The drones, he says, consumed a very perceptible amount of stores and our bees, in a state of nature, rear a large number of them.

Is there much larceny of bees and honey in the United States? It is a plague here. Two hives were robbed clandestinely at the Experimental Apiary here, not long ago. We were able, however, to save the bees of one colony.

Yours,
A. BERNARD,
Treasurer Algerian Beekeepers' Society.

(We have very little larceny of bees or honey in the United States. This petty thieving is almost all confined to the South and West. Our good friend, J. J. Wilder, who has thousands of colonies of bees scattered in the wilderness of Georgia, says that he loses thousands of pounds of honey every year through larceny, as the Georgia "Cracker" seems to consider everything in the woods as public property. In the North, the thieves do a better business in robbing the banks or the big safes of wealthy companies, and usually leave the bees alone. Is it any better for the public?—Editor.)

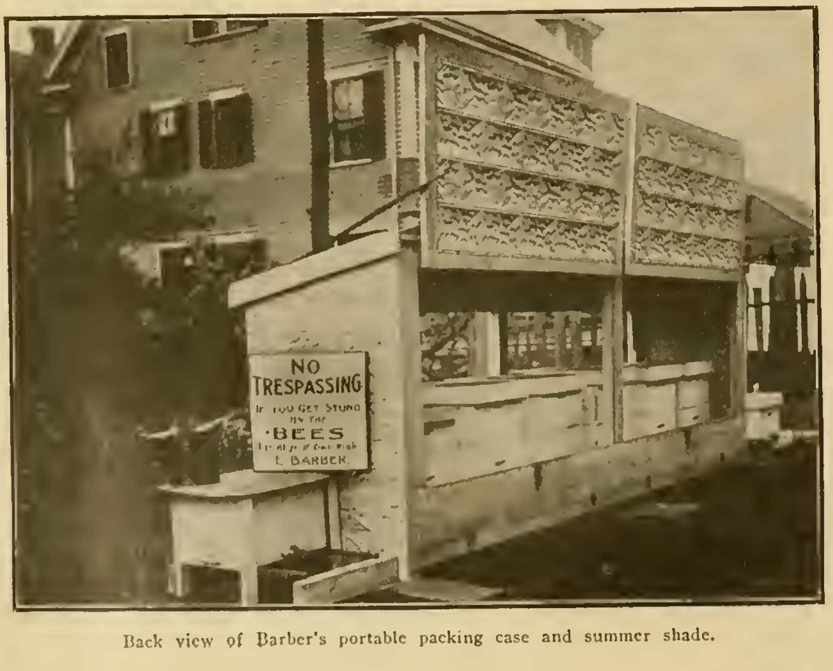
## Who Owns the Swarm?

An interesting lawsuit concerning bees is reported by the British Bee Journal of October 28. Briefly, it is as follows:

A swarm of bees was found in a hedge on the land of James Batstone, by Herbert Rumming, and was carried away by him. Batstone, who has bees, claimed that the bees were his, but could not prove ownership except that he missed a swarm which left one of his hives. He claimed damages, or the estimated value of the bees. The swarm had been taken by Rumming by crossing a ditch, also on Batstone's land. The swarm was hanging about a hundred yards from Batstone's apiary.

The judge gave judgment for the defendant. He quoted the original law laid down by Emperor Justinian that: "A swarm of bees that has flown from your hive is still considered yours as long as it is in your sight, and may be easily pursued. Otherwise it becomes the property of the first one who takes it."

In this case the swarm had never been in the owner's sight; it was a hundred yards from his home; it was never seen by the plaintiff on leaving the hive, on its way, or when it was taken. If it left the owner's sight, his property right in it was gone, although he might recover it, but if anybody else found and took it, it belonged to him. It appeared to him



Back view of Barber's portable packing case and summer shade.

that the law was as it was hundreds of years ago, that one lost the property in a swarm if he did not immediately go after it and catch it while it was in his sight.

As to whether trespass was committed, that was an entirely different question, and did not arise except in an action for trespass.

The editor suggested that the law should be altered so that a swarm of bees on the premises, near to the apiary of a beekeeper, should be his property, unless, of course, another beekeeper had seen the bees issue from his own hives and followed them. Under the interpretation as given in this instance, it would be open to any passer-by, seeing a swarm of bees, in a garden or orchard, which had swarmed from hives situated therein, to step in and "collar" them, the owner having no remedy except in action for trespass, if he had not actually seen the bees leave the hive and cluster.

## A Portable Winter Case

Edward C. Barber, of Massachusetts, sends us the accompanying photographs of his portable winter case, which he describes as follows: Each case holds six colonies and can be used as a summer shade and a winter packing box. There is six inches of packing space around the hives, which can be tiered up. The case is 45 inches high in front and 55 inches high at the back. The front doors are used for alighting boards in summer, as shown in the picture. On each side is a 2x4, which is 16 feet long and which extends past the ends of the case. Four men can easily load the whole outfit onto a truck and move it anywhere. They are great for packing the bees for winter, snug and tight and with the packing removed provide a cool shelter for summer.

## Robbing

I am a novice and your article on robbing, page 158, caught my eye. I have been having quite a bit of robbing. I have often read that if a colony was not able to defend its home against robbers they were not worth fooling with. I have had several cases of robbing and in each case I have got them stopped, and my plan is to get all the robbers in the hive being robbed, close the entrance with a block so no bee can pass. To prevent smothering I drive an 8-penny common nail under the cover on one side, then I leave them imprisoned thus for 48 hours; then, after dark, I remove the block from entrance and draw the nail from under the cover, and when I go next morning to see how things are, I usually find them quiet. I presume if the queen has not been harmed, in 48 hours' time, enough of those robbers will become loyal and stay to defend the hive. At least they have done so for me. I hope someone else will try the plan, and if not successful close them up again for 48 hours.

Another plan I tried was when I discovered robbing late one evening in October, last year. I closed the entrance with the robbers in, and after dark I opened it up. The robbers crawled out and covered the front of the hive. The next morning when I went out the robbers were going full tilt. I looked around to find all my bees quiet except at one hive, and of course that was where the robbers were coming from. I picked it up and moved it back about one rod, and put an empty in place of it. When the robbers returned and found no place to store their stolen sweets, they were so demoralized that robbing was not only stopped at once, but some of the robbers seemed to return with their loads to the pilfered hive and proceed to defend it. In no case have I ever moved the colony being robbed.

H. P. GANNAWAY.

## Queen Supersedure

By Henry Brenner

THE realization by the bees of a condition in the hive necessitating a change, and their subsequent activities to bring about the change has been styled by Maeterlinck as the operation of an intuitive law which he designates under the phrase "The Spirit of the Hive." Whatever be the force of intelligence that acquaints a colony of bees with the necessity for a change they ruthlessly carry out the mandate.

When a colony of bees realize that the mother queen is failing, either because of age or other infirmity, queen-cells are started. The building of such cells is commonly called supersedure.

My observation is that in building swarm-cells, under the normal reproductive impulse, the bees and queen work in unison. Supersedure, on the contrary, seems to be only the work of the bees. They work on their own initiative. The queen takes no hand in the work of superseding.

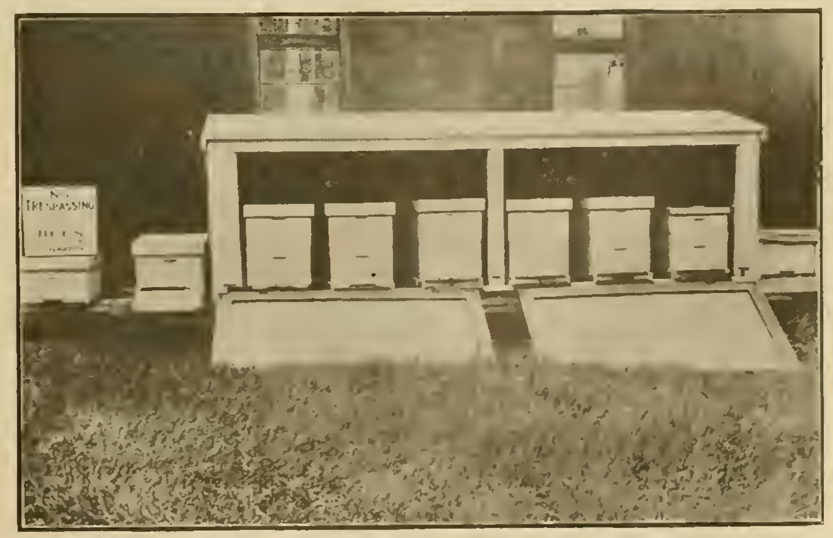
My observations lead me to believe that the bees build these cells without the knowledge of the queen. In superseding, the bees often, I may say generally, transfer larvæ or eggs to queen-cells in remote parts of the hive, which are seldom or never visited by the mother, or build new cells over the larvæ.

Supersedure cells usually occur in the outside combs of the brood-nest. That the bees do transfer larvæ to remote portions of the hive for superseding is proved by my having found in Porto Rico two colonies, one with one cell, and one with two, above an excluder. In both cases I examined the brood-nest and found two or three more cells, but these were on the outside combs.

Years ago, in Texas, I found very little requeening necessary in my outyards, while at my residence, in my experimental apiary, I found more than twice as many failing queens. This troubled me for some time. I could see no adequate reason for it. At last an accident suggested a solution. The bees of one of my best breeders were found to be in the act of superseding. I went, the next day, to cut out the cells. I intended to preserve the queen as long as possible because of her former good record and her type qualifications. I intended to use her to rear drones for my mating yards. Judge my surprise to find the cells gone. The mark of the queen was upon them, i. e., the opening at the side of the cell as made by an enraged queen when finding a possible rival. This gave me a clue which I followed.

Investigation brought me to the conclusion that the bees do the superseding and that they watch or guard the queen continually to prevent her from tearing down the cells. In my home apiary, where I open the hives often, the bees become disturbed by the smoker and are for a time disorganized. In consequence, the queen is given a chance to find and destroy the cells. In one-half of the cases where I saw evidence of supersedure I found that the cells were destroyed the next day by the queen when I opened the hives again.

If supersedure cells are put above



The doors of Barher's packing case are used for alighting boards in summer.

an excluder they are safe. The bees will not destroy them. If the cells are cut from the comb and put in a protector they may be left in the brood-nest and never come to harm. In due time a young queen will be found laying in the hive.

I realize that in making this assertion I am stating an opinion in conflict with that of the best-known writers on this subject. For instance, in the March number of Gleanings, Mr. Doolittle wrote: "In a case of supersedure the bees pay very little attention to the cells except to supply them with royal jelly, allowing the mother queen to go about them as she pleases."

Here in the tropics, queens lay during the whole year, except for short periods of rest at intervals. They wear out very quickly and consequently we have cases of supersedure in our apiaries at all times. Our queens here seldom do efficient work for more than one year to 18 months. This gave me excellent opportunities to continue the experiments begun in Texas, and I was delighted to find that my conclusions were abundantly verified.

In cases of supersedure, the young queen and the hive mother work together, but not for long. In looking into the hive a few days after one finds it to contain two queens, the older one will be found to be missing. Some writers state that it is only a mother and daughter that will thus labor together. I have found evidence to cause me to doubt this. It cannot be always the case. I winter young queens by the Alexander method, above the brood-nest. In uniting these super colonies with the main colony for the honey-flow, I found in at least three cases that the old and new queen were working together. I marked these hives and examined them again at my next visit. In every case the old queen was missing.

Supersedure cells from good stock, when reared under favorable conditions, are as good as the best swarm cells.

In a great many cases the bees were evidently trying to supersede their queen when a careful examination failed to reveal any cause for such action. The causes of supersedure are, therefore, at certain times, in doubt, but usually can be attributed to age or decrepitude of the mother.

## Bluevine or Climbing Milkweed

In the April, 1919, issue of this Journal we had some short articles about this plant. Much interest has been aroused and numerous requests for seeds have been received. While under favorable conditions it is a good honey plant, we would call attention to the fact that is is a serious pest in the corn fields and would warn readers against planting it in localities where it is not already established. Even where it grows freely it is not always valuable for honey, apparently.

The photograph herewith shows the leaves and the seedpods. This photograph was taken by the associate editor for his book on honey plants which will shortly be published.

## Sugar Feeding

"Special orders for sugar have been placed with Sugar Equalization Boards in Massachusetts to feed the bees. A ton and a half has been allowed for 2,000 swarms."

The above is a clipping that I took out of the Dearborn Independent. It shows about how much sense some of the public officials have. If this is true, a ton and a half of sugar would be a pound and a half for each colony; that would help the bees a lot!

I fed my bees this fall 20 pounds for each colony, and I am not sure now whether or not they have enough to last them over winter.

In your editorial you ought to comment upon this "liberal allowance" for the bees of Massachusetts.

C. O. SMEDLEY.

(The clipping is interesting. If the authorities figure 1½ pounds per colony, it is just in the line of the average man's knowledge of bees and beekeeping. But they may figure that only one hive in 10 will need feeding, in which case the amount would be about correct.

More than once we have seen people who imagined that we were making ready to manufacture honey, when, in a short time, we were buying 1,000 pounds of sugar for 500 colonies. But every man is ready to acknowledge that the amount is small when he learns that it figures only 2 pounds per colony. It is well to bring such facts before the public once in a while.—Editor.)

Seed pods and leaves of the climbing milkweed or bluevine.

## Bee Incubation

By Will H. Gray.

IN reading over the lectures of Dr. Phillips and Mr. Demuth there appears to have been a lot of discussion on the subject of keeping back brood rearing in the early part of the year, and then quickly building up for the honey flow, thus avoiding the wastage of stores and bees without any adequate return. This was in California, where the bees can fly about the year around. It was suggested then that a cold storage plant might answer the purpose and keep the bees quiet until eight weeks or so before the honey flow opened.

Years ago, when I had my first hive (and it was a weak one), I was greatly afraid they would die out, so, being of a mechanical turn of mind, I fitted a tin can in the back of the hive behind the dummy board (My frames ran with the entrance then, and they do still). I had a drain cock out of this can so that I could run the water off without disturbing anything. Then, night and morning. I filled the can with water at 80 degrees F., and lo and behold the queen came and filled the back frames solid with brood and then worked forward from that. I don't remember how long I kept it up, probably two or three weeks, and I fed all the time. I remember explaining it all to the Rev. J. G. Digges, editor of the Irish Bee Journal, and he threw cold water on my schemes by suggesting that I make a separate foot warmer for each bee!

A few years ago I tried out a similar plan, only using instead of the hot water, a six-candle-power carbon electric lamp, and the results were again very good, the queen taking up her quarters next the dummy board.

Of course these experiments are not conclusive enough except for further and more accurate tests. But my idea is that instead of the bees just dragging along trying to pull through until the honey flow, one might have by artificial heat a large colony that could do something with the flowers then in bloom, or else go in for the package trade, that must have early bees to succeed.

What I am doubtful about is whether the bees would be worth the sugar they cost. The heat cost would not amount to very much when the beekeeper is near a power line. At a pro rate of 5c per k. w., a six-candle-power carbon lamp burning steadily for three weeks would cost 50c. The wiring would be extremely simple, consisting of a pair of wires running along the back of the row of hives, and weatherproof sockets inside the hives, with their two wires coming out through a hole and attached one to each of the mains. If there were some good early honey flow, such as fruit bloom, etc., the results might be all right, as we all know the difference between strong and weak colonies at such times. This system would have to be carried out in a country where the bees could fly now and then during the time the heat was applied. At any rate, it would be worth while trying it out accurately, on enough colonies to be sure of the results.

Of course, the better protected the bees were, the less heat would be required inside, and the distribution would be more uniform.

One would also have to make sure there were enough bees to protect the brood before switching off the heat.

British Columbia.

(Of course, this thing would have to be tried comparatively before one could make sure whether there was anything in it. But we can testify that the most successful colonies that we ever had were located in a hothouse. They came through the winter so strong that they were powerful enough to make surplus honey from fruit bloom. But as we had them only one year, we were unable to find out whether such a scheme would succeed every season. Try your scheme on half of your colonies and report results in bees or honey. We will be glad to publish the report.—Editor.)

## Marketing

By C. C. Baker

I am very much pleased to note that in your last issue you took the liberty to give the producers who retail honey a little lecture on the folly of their ways. Heretofore I had been reading "cultivate your home market" so much in the different journals that I had about given up all hopes of ever seeing these retail producers "get theirs."

It is my opinion that if we can get the big jobbers to handling honey exclusively, that there will be a much better market created for it, for this reason: these big fellows, like the packers, have thousands of live salesmen on the road all the time. These salesmen call on all the grocers daily, as well as on hotels, restaurants, and every business house in existence that could use the honey. They are taking orders for all kinds of foodstuffs, and while the retail buyers are giving orders to these salesmen they are certainly in the right mood to order honey. Honey producers haven't the time to cover the retail trade like these salesmen do, and if they did have the time, they are not salesmen—not one in a thousand.

How much did the farmer get for his pork before the packers took hold of it? And how much for his eggs, and his beef, and his fruit, and his everything he raises—but honey. And honey is the only thing not handled by big packers of some kind.

Let these big buyers do the distributing for us, that is their business; producing honey is our business. We get paid for our business, let the other fellow get paid for his business. Why should we worry what the other fellow makes on our honey, as long as he does not invade our territory with bee yards.

When one of your neighbors comes to you for some honey, send him to your local grocer; if your grocer does not handle it, let the neighbor do without. There will soon be such a fuss kicked up that it won't be long until your local grocer will ask you to sell him some honey—then stick by him.

I worked this very scheme to perfection, and less than two weeks ago, following the purchase of several small lots of honey from me; this very local grocer of ours purchased a ton, in bulk.

Washington.

# DR. MILLER'S ANSWERS

### Miscellaneous

I am a farmer with a part interest in a 600-acre farm on which I have lived for 12 years. I have been running an apiary as a side line, but am about to dissolve my partnership on the farm, and as I think of taking up beekeeping as a business, thought I would tell you my experience and ask some advice. I had 10 colonies until the year 1917, when I bought 15 more colonies from some neighbor boys. I tried to buy some of another man; he had 30 stands, but they were in old dry goods boxes, and he wanted $150 for them, and I considered that was too much for them so I didn't take them and he sold them to a neighbor for $50. The neighbor's sons then bought them and billed them to sell at public sale.

In the meantime my honey trade had grown so that I couldn't supply the demand, so I saw the boys and bought the 15 colonies of them at private sale for $3.50 per stand. Of course I had to change all of them, so I put them in 10-frame standard hives and I found it quite a task, as they were so heavy for one man to lift.

1. Do you think I gave too much for them, considering the shape they were in? I had always sold the section honey, but found that it took too much of my time just when I was busiest with the farm work, so I changed to produce extracted honey. The year of 1918 I had 25 stands of bees and I sold $300 worth of honey. I put it in half-gallon Mason fruit jars and sold it at $3 per gallon. About the time to harvest my crop I was called to go to Camp Grant, so had to leave my honey for my family to harvest and sell for me, and I may have lost some that way, for the extracting wasn't finished until after I was discharged and got home.

Early this year I bought 30 more colonies of a man who said that the old ones didn't do anything but swarm, and that all the honey he got was from the new swarms. Some of them were in 8-frame hives and some in 10-frame, but they were all old hives, so I bought them at $3 per hive. I only had four swarms issue from my 53 stands of bees last summer. I consider that pretty good.

I have not finished extracting this year's honey crop yet, but will have about 3,000 pounds of extracted honey, and about 300 pounds of section honey, which sells at 25 and 30 cents per section in this locality.

2. Is that a good crop for that many colonies, or should they do better?

The majority of my honey is white clover, though I have some darker fall honey. My bees are mostly black, but the last two springs I have secured golden Italian queens for some of them. One queen I have is very prolific, so I gave her two stories for brood; then after she had filled the upper story with brood I caught her and put her back in the lower story and put on an excluder.

3. Would it have been better to have divided this hive?

4. To divide the hive should I take the upper story with brood and eggs and set it about two feet away? If I did that would they hatch them a queen from the brood? Or would it be better to put the upper story on the old hive stand and move the old hive away?

5. Do you think one could make a good living on 20 or 40 acres in this section, with some fruit and about 500 stands of bees? Could one man take care of that many bees?

6. About how many colonies of bees would two acres of sweet clover and two acres of buckwheat make pasturage for?

7. Would it be better to run a home apiary for section honey and the outapiaries for extracted honey?

8. In producing section honey is it better to clip the queen's wings?

ILLINOIS.

Answers.—1. No; at the present time this is a reasonable price.

2. An average of 50 pounds per colony, year in and year out, is generally considered a good average. Yours was 66 pounds. So that its a very fair crop.

3. If you wish increase it is better to make it from colonies that are not likely to give you much honey, raising your queens from your very best colonies.

4. The first method you mention is good, but not so good as the second. Taking away a hive of brood and bees, leaving the queen and all the old field workers on the old stand is likely to give you a colony too weak in bees to take care of the brood.

5. There is a very good living in 500 colonies of bees aside from the yield of 20 to 40 acres of land. One can care for 500 colonies, but they ought not to be all in one apiary, and one could not do much with the land without hiring help.

6. That is a hard question to answer, and I doubt whether anyone can answer it correctly. It is a guess at best.

7. Yes.

8. Yes, certainly.

### Bees Leaving Hive—Disease—Rearing Queens

1. What is the matter when the bees go out of their hive and go in another hive with bees in it?

2. What is best to do if the bees have diseases?

3. When is the best time to rear queens?

4. What kind of a bee is brown and has 3 snow-white bands?

5. Do you think there is any chance to get pure Cyprian queens or bees?

TEXAS.

Answers.—1. Bees may "drift," that is, go into the wrong hive, when they are out for the first time and are attracted by the greater noise of the bees of another hive; also when their hive has been moved from its position. Bees may also leave their hive entirely and join another hive when they are starving, or they may swarm when they are crowded for room.

2. It is out of the question to treat of diseases in the replies to questions. Send for the book "First Lessons in Beekeeping," or "The Hive and Honey Bee Revised." You will find a whole chapter in each of these books on diseases of bees.

3. Queens may be reared all summer long. But the best time is during the honey crop.

4. We don't know of any such bees.

5. Cyprian bees have not been imported, that we know of, for years. They are so cross that it is not likely anyone has ever tried to keep them pure.

### Requeening

1. I have a few colonies of hybrid bees which I wish to requeen next spring, and wish to keep them queenless the shortest time possible. Would the bees accept a ripe queen-cell immediately after the old queen was killed, or would I have to use a queen-cell protector?

2. Would the bees build queen-cells if I should put all but one frame of brood in a new hive, leaving the queen and one frame of brood in the old hive, and set the new hive on top of the old hive with a queen-excluder between? TEXAS.

Answers.—1. No, they would not accept an unprotected cell till fully conscious of their queenlessness. That might be less than an hour or more than a day.

2. Maybe, and maybe not. The more the brood is cut off from the queen, the more likely cells will be started. A zinc excluder is better to get them started than a wire one. A cloth nearly covering the excluder will help. The higher up the brood is, the better.

### Prevent Swarming

I intend to move my bees in the country and will be with them about one day each week. I would like to adopt some plan to keep them from swarming, or swarm them at my convenience.

When a colony shows signs of swarming, if I should put brood-chamber above a hive filled with foundation and queen-excluder on it, putting the queen with one frame below, cutting out all the queen-cells in the above hive, will that prevent swarming? If not, kindly give the best method generally used in outapiaries. NEW YORK.

Answer.—Yes, the method you indicate will help to prevent swarming, though we cannot, with any method, make sure of having no swarms at all. Cut the queen's wings, then the swarm can't get away so easily.

### Size of Hive—Full Sheets—Italian vs. Blacks

1. Bees swarm here in April, but we get no surplus till the latter part of July and August. Betwen these dates there is a continuous, though light, flow of nectar, just enough for brood-rearing. Under these conditions would you advise me to use 8 or 10 Langstroth frames in the brood-chamber?

2. From a purely financial viewpoint, do you consider it economy to use full sheets of foundation?

3. Will a colony of Italian bees gather more honey in a season than a colony of blacks or hybrids?

4. Under conditions in No. 1, what can I do to have my colonies reach maximum strength by July 15? TEXAS.

Answers.—1. Eight-frame hives are too small unless you use two stories for brood. Two stories are really needed if you wish the full production of bees from prolific queens. Have them as strong with bees as you can get them at the opening of the flow.

2. Yes. Try it comparatively for yourself. That is the best way to be convinced. Don't try it on only a hive or two, but on a fair proportion of colonies. Full sheets will give you nearly all worker combs. Starters will give you any kind of combs the bees take a notion to build.

3. It would be a mistake to lay down a flat rule. But on the average Italians are much better producers than blacks.

4. Give them all facilities to breed by giving the queens ample room and seeing that they have plenty of food.

### Horse Stung—Freak Queen

In your November issue a New Jersey man wishes to know what to do for stings on a horse; my experience was successful. The horse laid down and acted as though he had the colic. I took a corn knife and scraped the stings off and then took a large pail, filled it half full of salt, then water, and stirred it up; soaked burlap sacks and covered her up, then kept them wet. In three hours I drove home none the worse off. I bought a queen this summer which arrived too weak to live. I ordered another, which was a fine looker. When she began to lay there were from two to six eggs in each cell; they never hatched a bee. What is the cause? I finally killed her and doubled the bees that were left (which were few) with another colony. I have only four, but they are good and strong. IOWA.

Answer.—Your advice as to treatment of a horse that has been badly stung is very good. Ammonia diluted with water would probably be good, too. But it is easier to find salt and water than ammonia, on a farm or about an apiary.

Your queen was a freak. Once in a great while we come across a defective queen and we are unable to tell what is wrong. You might buy 500 queens before you would again have such an occurrence. It was an accident, evidently, and nobody to blame.

### Increase

Would it not be easier and cheaper for anyone desiring increase to make ready for same in the fall rather than wait till spring, as follows:

Place a regular hive-body (filled with frames and foundation) underneath the regular hive, letting them have the use of both bodies; then, in the spring, place the lower one on top, letting bees fill both hives with brood and bees; then introduce a queen into the one that would be queenless after disuniting. NEW YORK.

Answer.—It is all right to get your hive ready in the fall or winter, but I cannot see much to gain in giving the bees a hive full of foundation until they can use it. You would have to give it to them before the crop ended. Otherwise it is probably better to keep it away from them till spring.

### Getting Good Stock

1. Is there the same danger of getting inferior offspring in breeding from an extremely old queen as there is in breeding from livestock that is feeble with age? Would it be advisable to breed from a queen that has been the best in the yard when she was young, but has materially deteriorated with extreme age?

2. How near the beginning of the only profitable honeyflow that we have, which only lasts four weeks, can one requeen colonies that are as weak as to cover only six frames, if he has to buy early queens, and wants them to pay for themselves in that flow alone? NORTH CAROLINA.

Answers.—1. Perhaps there would be danger of inferior offspring with a very old and decrepit queen. This is difficult to decide. Better not wait till your queen is too old, especially as you might not get anything but drone eggs.

2. You can requeen at any time, if you buy your queens. But if you rear them, better wait till the honey crop is fairly advanced. Bought queens, introduced at the beginning of a flow, will not produce workers in time for that flow, unless it is an extremely prolonged flow. It takes 35 days before the egg laid gives an active field worker. Reared queens will produce them only for the next flow.

### Golden vs. Three-Banded

How do the golden Italian bees compare with the three-banded Italians in honey gathering, in disposition and in fighting foulbrood? MICHIGAN.

Answer.—The goldens are sometimes very good, sometimes rather inferior. Much depends upon whether they were bred only for color or whether other qualities were considered also in raising them. Personally, I prefer the pure, three-banded Italians, bred with a view of securing the main characteristics of the race, without consideration of extra yellow color.

### Skunks

I have a number of weak colonies of bees this fall. They have done nothing all summer. I have noticed skunks around my stand; do you suppose that they have made them weak? Please let me know what you think about it in your next Journal. WISCONSIN.

Answer.—Skunks are fond of bees, but it is hardly probable that they could weaken colonies of bees in an apiary. If your bees have done nothing all summer, it is more probable that the honey crop was short and that they did not breed as they should. However, if you have any skunks in the vicinity it may be worth while to trap them.

### Foulbrood—Robbing

1. I have a few hives of European foulbrood in my apiary. Should I requeen the whole apiary or just the hives that have it? Of the two, which is the hardest to control, American or European foulbrood?

2. Are Italian bees more resistant to European foulbrood than the blacks?

3. Does nosema-disease affect the flying bees or the brood; is it a new disease, and do you think it is as bad as foulbrood?

4. While I was extracting honey this year the honey-house door blew open while I was eating my lunch. When I returned I found the bees doing a land office business. It struck me that the bees robbing the house were from about 5 or 6 hives, for the reason there was an unusual amount of bees at their entrances. Do you think it was the whole yard, or just these few hives?

5. What is the proper thing to do with a bad case of pickle-brood in a hive of black bees?

6. I introduced a young Italian queen about a month ago. When I opened the hive the other day I found some drone-brood in the worker-cells, also 2 and 3 eggs in one cell, some on their side and some on end. I also found some good worker brood. This is a small swarm, covering about 4 frames. What is your opinion of this queen? CALIFORNIA.

Answers.—1. Requeen only the hives that have it. The two diseases differ, but both are difficult to cure. American foulbrood, if thoroughly treated is likely to disappear. European foulbrood often shows itself when we think we have stamped it out.

2. Yes, without doubt.

3. It affects the full grown bee. It is not as bad as the foulbroods.

4. Undoubtedly only those colonies that were excited.

5. Be sure that it is only pickle-brood (sacbrood). Then feed them on sugar syrup, provided they are still strong enough to be worth saving.

6. Either that queen is deficient or there is also in that hive an old queen laying drone-eggs. Usually, when we see eggs laid several in a cell, it is a sign that there are some drone-laying workers in the hive.

### Number of Bees in Pound—Shipping Bees

1. Tell me the number of bees to the pound, generally speaking?

2. Will it do to ship bees at this season of the year? NEBRASKA.

Answers.—1. For all general purposes we figure on 5,000 worker-bees to the pound.

There are less of them when they are full of honey. There are more of them when they are starving.

2. It will do to ship bees now better than in the summer. But the best time to ship bees is when they have the least honey, in the spring, before they breed very heavily.

## Using Old Supers

1. White clover honey failed this year, as there was so much rain until clover matured too much to contain honey, and I now have a large number of sections that are not filled; some have only a small piece of comb built in them from the starter. I ask your advice as to what I shall do with them.

2. Will supers just as they were taken off be good for another year without taking them apart?

3. Some sections have a little unsealed honey in them; will the bees use them, or must I take them out? INDIANA.

Answers.—1 and 2. Those supers will be very good for another season, just as they are, provided you keep them in a dry, clean place, away from dust or mice. They will need more scraping when full than if they had been filled the first time. But the comb in them will attract the bees to the super.

3. It is not necessary to remove the honey, unless it is amber honey and you expect to get white honey in the spring. Since the combs are not sealed, you might place all the partly filled sections in one super, and use it to feed the bees in early spring.

## Amount of Bees for 20 Acres of Clover

Near where I live there is a considerable quantity of white sweet clover that grows along the sidewalks, in vacant lots and alleys. My estimate is that there would be about 20 acres of it available for bees if it was all together. Would 100 colonies be too many for this location? CHICAGO.

Answer.—Unless there are other plants, I would be inclined to think it would be hardly sufficient for a good honey crop for 100 colonies. Better keep a less number. However, that is only a guess.

## Requeening

This past season I have had a number of colonies go wrong by allowing them to requeen themselves in cases of supersedure. Have had virgins go nearly a month before laying, and then disappear in a few days. In the future I propose to keep laying queens in nuclei for immediate use. In case of a natural swarm with clipped queen, would it work with quite a certainty of success to run in with the returning swarm a new queen taken from a nucleus? LONG ISLAND.

Answer.—I have seen queens balled which happened to join a swarm. So there would perhaps be danger of the new queen being balled, which is always objectionable. But if you can make sure of the clipped queen, so that she will not return to the hive, you can probably have your new queen accepted by caging her a few hours. Yet, if the colony has queen-cells, there is still danger of non-acceptance. Hive your swarm on the stand of the old hive, giving them the new queen, and remove the old colony to a new spot. Then all will be harmonious.

## Supers On in Winter

I have 10 colonies of bees in ten-frame Danzenbaker hives. I used the shook-swarm system last summer and my colonies are larger than usual. I thought they would not have room for themselves and their provisions in the shallow ten-frame Danzenbaker brood-chamber (7½ in. deep), so I left a super partly filled with honey on the brood-chamber for over winter. The hives are covered with tar paper and kept in a woodshed, where the temperature varies around zero in cold weather. But they are in no draft. They made about 80 pounds of honey per colony in the supers this summer and the combs seem to be filled with honey. Would you leave the supers on? IOWA.

Answer.—It may not be necessary, but it will certainly do no harm in those very shallow hives. When you speak of having them in a woodshed you surely do not mean that you will keep them closed up in there. If you have them so they can fly in warm days, they are just that much better off than in the open.

## Feeding Outapiaries—Granulated Honey in Combs

1. My feeding of winter stores has hitherto been confined to a small home apiary. Last summer I branched out and placed 55 colonies 14 miles from home. Fortunately a heavy buckwheat flow obviated the necessity of feeding this year, but I wish to know the quickest and most satisfactory method of feeding outapiaries. I take it for granted that it is customary to feed syrup warm. Do large commercial beekeepers manage this by making the syrup at home where they have some conveniences, or take the heater and sugar to their outapiary? What is the best contrivance for making syrup in large quantities without danger of scorching the syrup?

2. I was unable to extract my buckwheat honey until the 10th of November, too late to place the extracted frames back on the hives for bees to clean up. The buckwheat honey had granulated somewhat, but not badly. Will this granulation affect the condition of the combs next spring, and will I be liable to have trouble with them on this account? I have been told that on account of granulation in these combs all my honey next season is quite likely to granulate quickly and may give me a good deal of trouble—is this correct? ONTARIO.

Answers.—1. The manner of making syrup depends upon the conveniences in reach. Cold water will do to make syrup, but it is both better for the bees and a little more speedy to use hot water. The proper quantity of sugar poured into boiling water will speedily make all the syrup you want. Then pour it into 5-gallon cans, with screw-cap spouts similar to gasoline or coal oil cans, for convenience in pouring it into the feeders. Keeping the cans well covered during the trip, you will have no trouble in reaching your outapiary with warm syrup. But variations from this method are often resorted to. They also percolate the water through the sugar, letting it come through a sheet of muslin.

2. It is not likely that you will have any trouble from that granulated honey, if you return the supers to the bees a few days before the opening of the crop. They will clean them and burnish them at that time. The worst trouble I can see is their keeping some of that dark honey in the supers and mixing fine white honey with it, next June.

## Wintering—Bees on Leeward Side of Tree

My beekeeping for the last 25 years has been in California, where the wintering problem was not seriously considered, which is my reason for asking a question or two.

1. Will one frame taken from a 10-frame hive give sufficient space for wintering in a cold climate?

2. You say in Gleanings, page 587: "They know that their hive is the right-hand one of a pair." I infer from this that the hives face in opposite directions; is it not so?

3. I think, Doctor, on further investigation you will find that the reason for the bees being on the leeward side of a tree in bloom, Gleanings, page 587, is because a bee cannot alight flying with the wind, and if she should undertake to do so she would be carried through to the other side. In California I invariably faced my hives toward the east, as only on very rare occasions did the wind blow from any other direction than from the coast (west). Occasionally we had a desert (east) wind, and it was always very strong. The bees on these occasions had a very hard time entering their hives. They would be blown to the back of the hives in clouds awaiting an opportunity for a lull to skip around the corner of the hive to enter; but when the wind blew ever so hard from the west they seemed to have no trouble in making a landing. When the wind blew squarely into a hive and when a bee more venturesome than the others undertook to land she would invariably "tumble" in. UTAH.

Answers.—1. Abundant, I think.

2. No, the two hives of a pair face in the same direction.

3. If you will observe closely next time qou see bees working on a honey tree, I think you will change your mind. Not only in a strong wind, but in a gentle breeze, when scarcely a leaf is stirred, there will be a cloud of bees on the leeward side and none on the windward side, although the leeward side may be the farther side from the apiary.

(The answers to the above are in Dr. Miller's own handwriting and we are glad that he is getting well enough to do that much.

Quection No. 3 is whether the bees come from the leeward side to a tree because of getting the odor wafted by the breeze of because they must fly against the wind to get anywhere. It seems to us that both of these causes serve. Bees cannot very well get the odor except from the leeward side, and in a strong wind they might be carried beyond it if they did not come steadily against the wind. —Editor.)

## Wintering—Cutting Out Queen-Cells

1. What would be the longest time that bees can stand being housed up?

2. Would you advise putting bees in winter quarters at this date? I have a good basement, high and dry.

3. I am using the 10-frame hive and all frames are full. Would it be safe to take out one outside frame for honey? Would there be stores enough for the bees?

4. At what time do you advise cutting out queen-cells? MINNESOTA.

Answers.—1. The longest time I have known bees to be kept in a cellar was 186 days. This was achieved at Charlesbourg, Quebec, by Mr. Verret, and the bees came out in good shape. But they must have good healthy food and must be kept at the right temperature, between 45 and 50 degrees, or at whatever degree keeps them quietest.

2. They may be put in the cellar earlier in Minnesota than in countries farther south. The proper time is shortly after they have had a good flight, before cold weather.

3. If your combs are all heavy with honey, they will winter on 9 combs full, but it is quite likely that they may need some feeding in spring.

4. We never cut out queen-cells. Those who practice that method do it whenever they find queen-cells with eggs or larvæ in them, at swarming time. But unless you take steps to prevent swarming, it does not do any good to cut out the queen-cells.

## Transferring—Stimulating Brood-Rearing

1. I have 12 colonies of bees in box hives and would like for you to advise me a little on this question: I want to transper them to movable frame hives next spring, as soon as it gets warm. I want to put them on foundation. Could they get pollen soon enough to raise their brood, or could I feed them something that would take the place of pollen?

2. What would be the best to feed them for pollen. WEST VIRGINIA.

Answers.—1. The proper time to transfer from box hives or gums is during fruit bloom, because they have less honey and less brood and more chance to repair their losses than they would at any other time of the year. But if you want to transfer only the bees and do not wish to save the combs, you may do it at swarming time, by driving most of the bees and the queen out of the box hive and hiving them just like a new swarm. The old hive is then put a short distance back of the new one and in 21 days the hatched bees are united to the transferred hive. The better way, however is to transfer all the brood combs during fruit bloom. You will find directions given at length for this in the "Langstroth Revised," paragraphs 574 to 581, or in "First Lessons," paragraphs 94 and 95.

2. It would be a mistake to transfer your bees so early that you would be compelled to feed them either pollen or honey in quantity. But to answer your question as to what would take the place of pollen; I have supplied flour to bees, in open boxes, at times when they could fly, before there was any pollen. The bees are attracted there by placing some old combs on the flour. Some of our modern scientists assert that flour is useless as pollen. But I am sure they took it in large amounts and used it.

# MISCELLANEOUS NEWS ITEMS

### New Jersey Convention

The New Jersey beekeepers will meet at Trenton on January 13 and 16. Space will not permit inserting the complete program. Secretary E. G. Carr, of New Egypt, has made every effort to provide something of interest for every minute, and a live meeting may be expected.

### Error Corrected

In our December issue we gave the name of the secretary of the Washington State Beekeepers' Association as H. Christensen. This is an error. Mr. George W. B. Saxton, of Harwood, is secretary. That portion of the Journal was already printed before we discovered the mistake. The convention will be held at Seattle on January 22 to 24. Frank C. Pellett, of this office, and Kenneth Hawkins, of Watertown, Wis., expect to be present, if possible. The completed program has not reached this office at the time this is written.

### Short Course at Iowa

We have received an announcement to the effect that a short course for beekeepers will be held at the Iowa Agricultural College at Ames, beginning February 8. This is to be the same course that has been so successfully conducted in the Western States by the Government staff of beekeepers in co-operation with State officials.

### Nebraska Meeting at Lincoln

The annual convention of the Nebraska Honey Producers' Association will be held at Lincoln on January 19 and 20. The Nebraska beekeepers choose to meet at the agricultural college in connection with the annual round-up of organized agriculture. Kenneth Hawkins, of Wisconsin, and Frank C. Pellett, of the American Bee Journal, expect to be present.

### Kansas Short Course

An extension short course for commercial beekeepers, similar to those held in California and other Western States, will be held at Manhattan, Kans., at the Agricultural College, from February 2 to 7, 1920. Doctor Phillips and G. S. Demuth, of Washington, will be present. Prof. E. D. Ball and C. P. Dadant will also take part in the program. Doctor Merrill has been actively engaged in developing the beekeeping work in Kansas for some time, and a good attendance is expected.

### Ontario Short Course

Professor Millen advises us that the short course in beekeeping at the Ontario Agricultural College will be held at Guelph from January 13 to 24. A number of prominent Canadian bee-men will be present to assist Professor Millen. Professor George H. Rea, of New York Agricultural College, will also be present. All interested in beekeeping are invited to be present.

### A Live County Association

The Randolph County, Arkansas, Association held their regular session on November 12, with 22 members present. J. V. Ormond and J. E. McKell, of Little Rock, were present and addressed the Association. Randolph County boasts of the strongest association in the State, with James F. Johnson President, J. D. Levil Vice President and John R. Kizer Secretary. The next meeting will be on March 11, at which time the members will list such supplies as they expect to buy through the organization.

### A Good Report From Montana

Mr. Cyrille Ghekiere is the only beekeeper on the Valier project in Montana. He reports that it is a good location for beekeeping and that he extracts from 100 to 125 pounds of white honey per colony per year. He uses the Dadant frame with a large brood chamber holding 15 or more of these frames, and extracts only from the super. He is thus always assured of ample reserve stores in the brood chamber. He winters in the cellar and reports that he is able to carry his bees through without loss by maintaing a temperature of 40 to 45 degrees in the cellar.

### Beekeepers at Canandaigua

We will have a bee convention in Canandaigua, N. Y., January 13. It will be our 31st annual gathering.

F. GREINER.

### Can This Be So?

With regard to the bees' fondness for blue flowers. This is indisputable. Centuries ago the Hittites, and after them the Amalekites, discovered this partiality, and turned it to evil account by growing flowers blue in color but rich in opiates, and so succeeded in making a drink from the honey which had a doping effect. Kings and peasants ruined themselves, body and soul, through this fibre-destroying beverage.—E. F. Hemming in British Bee Journal, page 454.

### The Iowa Convention

The Iowa Beekeepers' Convention recently held at Des Moines was one of the best in the history of the organization. A special feature of the meeting was a banquet served by the association, to which prominent men in other lines were invited as guests. Editors of several farm papers, including the editor of the American Fruit Grower at Chicago, were present, as well as members of the faculty of the Agricultural College, State officials, etc. Such occasions do much to arouse interest in beekeeping on the part of those engaged in allied pursuits and lead to harmonious action when problems of general interest are before the public. The association voted to affiliate with the State Horticultural Society and thus to work in harmony with the fruit growers of the State. Such action speaks well for the future of the Iowa organization. Dr. Bonney was re elected President; E. G. Brown Vice President, and F. B. Paddock Secretary. F. H. Stacey, M. D. Johnson and J. C. Donohue were elected Directors.

### Ohio Short Course

A short course for commercial beekeepers will be held in connection with the annual program of the Ohio Beekeepers' Association during Farmers' Week at the Ohio State University, Columbus, from January 26 to 30. In addition to lectures by faculty members of the University, E. F. Phillips and George S. Demuth, specialists in bee culture of the United States Department of Agriculture, will also speak daily and give demonstrations on vital problems in beekeeping.

Similar courses have been held in other States in co-operation with the United States Department of Agriculture and have attracted over 100 beekeepers. Deailed information may be secured from Prof. James S. Hine, the Ohio State University, Columbus.

### Wayne County Beemen to Meet

The Wayne County Beekeepers Society will hold their third annual meeting in the Grange Building at Newark on January 30, 1920, and all interested are invited to attend. George Rea will be present. For further information address Deroy Taylor, Newark, N. Y., Secretary.

### Co-operation

In the May number of the American Bee Journal, 1918, appeared an article on co-operative selling, page 158. It contains much of good common sense. But for those who are interested in co-operation I would refer them to Monthly Bulletin, Vol. viii, No. 7, of California Commission of Horticulture, Sacramento, Calif., G. A. Hecke, Commissioner. This gives a report of the work of many of the co-operative organizations in California, and they have been a success.

ROY K. BISHOP.

### New York State Meeting

The State meeting of New York beekeepers will be held at Syracuse, February 4 and 5, this promising to be the most interesting and extensive meeting ever held by this organization and you cannot afford to let this meeting pass without attending same. For program address C. M. Cunningham, 303 University Place, Syracuse, N. Y.

### The National Convention

As we go to press word comes from Secretary Justice to the effect that the National Convention will be held at Buffalo, N. Y., in Hotel Statler, on March 1, 2 and 3. This should not be confused with the conference of delegates to be held at Meulbach Hotel in Kansas City on January 6, 7, 8 and 9, at which it is proposed to work out a plan of reorganization of the National. Delegates representing all beekeeping organizations of the United States, teachers of beekeeping and members of allied trades will attend the Kansas City conference in an effort to devise a plan for a national organization which will meet the needs of the times. A report of this conference will be ready for the general convention at Buffalo, and it is hoped that the attendance will be a large and representative one. The program will be announced later.

### Missouri Meeting

The annual meeting of Missouri beekeepers will be held at Columbia on January 19 to 23. Those interested can secure programs and other information from Dr. L. Haseman, at Columbia.

### Dr. C. C. Miller and His People

Dr. C. C. Miller is an international figure. Every beekeeper who belongs to the progressive caste knows him through his writings. So a few words from his pen, after a siege of sickness, at the age of 88, will be of interest. Not only he has been laid up, but Miss Wilson, his sister-in-law, who has for years managed the "Beekeeping for Women" column in this magazine, has been suffering of her eyes. Dr. Miller writes:

"A few years ago Miss Wilson's right eye began to be obscured by a cataract, and in time became entirely blind. Oculists, however, advised that nothing should be done about it so long as she had one good eye. Then the left eye became troubled in the same way. When it became so bad that she could no longer see to read, an operation upon the right eye took place with entire success, and after nineteen days' sojourn in the hospital she is expected to return home, seeing.

"With regard to myself, while I am thankful to be gaining, yet in some respects the gain is not so rapid as I should like. I find myself quite disinclined to make any mental exertion and quite inclined to put off till afternoon what I should like to do in the forenoon, and when afternoon comes to put it off till next day. Maybe it's pure laziness. I feel keenly your kindness and forbearance, and I'm hoping that as I am increasing in physical strength I may overcome this feeling of la—well, you can finish out the word with "ssitude" or "ziness," just as you like.

"Mrs. Miller seems to have become tired of being the only one in the family in vulgar good health, so on Wednesday of last week she fell and sprained both wrists, and has suffered severely with them.

"Since the above was written a telephone message from Elgin informs is that Miss Wilson's return home will be later than was expected, at least by a day or two.

"C. C. MILLER."

### Pennsylvania Farm Products Show

The fourth annual Farm Products Show of Pennsylvania will be held at Harrisburg January 20 to 23. A special provision is made for a series of twelve premiums on honey and hive products with first and second offerings for each class. Exhibits should be sent to Chas. N. Greene, Department of Agriculture, Harrisburg, to reach him not later than Jan. 20, 1920. Exhibitor's name and address should be plainly marked on each package. Exhibitor's name will be placed upon exhibits after judging has been done.

The beekeepers' convention will be held at Harrisburg on January 21.

## CLASSIFIED DEPARTMENT.

Advertisements in this department will be inserted for three cents per word, with no discounts. No classified advertisement accepted for less than 35 cents. Count each initial or number as one word.

Copy for this department must reach us not later than the 20th of the month preceding date of issue. If intended for classified department it should be so stated when advertisement is sent.

### BEES AND QUEENS

FOR SALE—Leather colored Italian queens, tested, June 1, $1.50; untested, $1.25; $13 a dozen. Root's goods at Root's prices.
A. W. Yates, 15 Chapman St., Hartford, Conn.

IT'S MARCHANT'S STRAIN that does the work, that's all. See ad elsewhere.
A. B. Marchant, Jesup, Ga.

PURE ITALIAN QUEENS — Dependable breeding stock my specialty. Bees in 1 and 2-pound packages. Circular free.
J. E. Wing, 155 Schiele Ave., San Jose, Cal.

FOR SALE—Three-band Italian queens from best honey-gathering strain obtainable (no disease). Untested queens, $1.25 each; 6, $6.50; 12, $12; select untested, $1.50 each; 6, $9; 12, $18; tested, $2.50 each. Safe arrival and satisfaction guaranteed.
W. T. Perdue, R. 1, Fort Deposit, Ala.

ITALIAN QUEENS OF WINDMERE will be ready in May. Untested, $1.25 each; six for $7. Tested, $2 each; select tested, $2.50. Write for quotation on nuclei. Now booking orders. Prof. W. A. Matheny,
Ohio University, Athens, Ohio.

ITALIAN BEES (the kind that fill from 2 to 6 supers), for sale, in new 8 and 10-frame Root hives, at $12 and $15 per colony, if ordered soon. Bees to be shipped by express in April. Miss Lulu Goodwin,
Mankato, Minn.

FOR SALE—After April 15, our golden Italian queens, untested, one $1.50 or $15 per doz.; select untested, one, $1.75 or $18 per doz.; tested, $3 each. Safe arrival guaranteed. Tillery Bros.,
R. 6, Georgiana, Ala.

FOR SALE—Goldens that are true to name. Select untested, one,$1.50; six, $7.50; 12, $13.50; 50, $55; 100, $100.
Garden City Apiaries, San Jose, Calif.

FOR SALE—Golden and three-band queens. Untested, April, May and June delivery, $1.25 each; $12.50 per doz. Satisfaction.
R. O. Cox, Rt. 4, Greenville, Ala.

25 CENTS buys a folder, telling the whys and wherefores and the principle of introducing queens. Just the thing for the beginner; and maybe something new for the expert. Nature's way on the inside of the beehive. The cream of thirty years' experience as a queen breeder in introducing queens.
J. F. Diemer, Liberty, Mo.

FOR SALE—Famous strain of Italian bees and queens. We are booking orders for May and June delivery, 1920, for two and three-pound packages of our famous strain of 3-band and golden bees and queens. First come first served. Our bees are free from all foulbrood disease. These bees are record breakers for honey gatherers, and they are beautiful queens, and give a gentle worker bee. All told they will please, and do please, our customers. Write your needs and get price list. H. B.Murray, Liberty, N. C.

FOR SALE—Pure 3-band Italian queens, as good as you can buy with money. Write for prices. J. F. Diemer, Liberty, Mo.

FOR SALE—Italian queens, from best disease resistant stock, mailed as soon as hatched. Improved method for introducing with every order. Prices, April to October, 1, 75c; 10, $6; 50, $25. Order now for spring delivery.
James McKee, Riverside, Calif.

BEES BY THE POUND, ALSO QUEENS—Booking orders now. Free circular gives prices, etc. See larger ad elsewhere.
Nueces County Apiaries, Calallen, Texas,
E. B. Ault, Prop.

BEES AND QUEENS from my New Jersey apiary. J. H. M. Cook,
1Atf 84 Cortland St., New York City.

FOR SALE—100 colonies of bees, most all in new hives with Hoffman frames. Plenty of stores. Address James Johnson,
Box 265, Pocahontas, Ark.

### HONEY AND BEESWAX

FOR SALE—New crop clover honey in new 60-lb. cans, two to the case; sample 20c.
W. B. Crane, McComb, Ohio.

FOR SALE—Choice "Kentucky" clover extracted honey. Well ripened, thick and rich. Perfectly clean and suitable for table use. Packed in 60-lb. tins, two in a case, at 25c f. o. b. H. C. Lee, Brooksville, Ky.

FOR SALE—10,000 lbs. clover and 5,000 lbs. clover and heartsease honey, $24 per case of two 60-lb. cans. Sample 15 cents; also 200 cases No. 1 comb honey.
J. D. Beals, Oto, Iowa.

WANTED—To buy—Extracted honey. State price, how packed. Send sample.
Harmony Bee and Honey Co.,
White Bear Lake, Minn.

WANTED—Light extracted honey, any amount. Send sample and best cash price f. o. b. Ft. Collins, Colo.
A. A. Lyons, Ft. Collins, Colo.

WANTED—Honey in 10-lb cans.
Lang, 1609 Dayton St., Chicago.

FOR SALE—30,000 car white extracted sweet clover honey, 18c a pound f. o. b. Basin, Wyo. J. N. Minkes, Box 525.

OUR CROP OF HONEY is now ready for shipment. It is a good grade white clover with a very small trace of basswood, almost water white. It is put up in new 60-lb. tin cans, two to the case. This honey was all produced by ourselves above queen-excluders, in nice white combs. Then combs were provided so that no honey was taken off until after the season, when it was thoroughly cured by the bees. It costs more to raise a crop of honey this way, as we do not get as much per colony, so we have to have a little more money for this fancy article than the ordinary honey on the market. Try a small order and we feel sure you will buy no other.. We can furnish at the following prices, f. o. b. Northstar: one 60-lb. can $15.50; in cases of two cans, $30 a case, in any sized orders. The crop is short this year and will not last long at these prices. We feel quite sure that the price will not be any lower, so do not be disappointed by not ordering early if you are looking for honey as good as money can buy.
D. R. Townsend, Northstar, Mich.

FOR SALE—New crop clover extracted honey, two 60-pound cans to case, 25c per pound. Buckwheat and clover mixed, about half and half, 20c per pound.
H. G. Quirin, Bellevue, Ohio.

WANTED—White clover or light extracted honey. Send sample; state how honey is put up and lowest cash price delivered at Monroe; also buy beeswax.
E. B. Rosa, Monroe, Wis.

WE BUY HONEY AND BEESWAX—Give us your best price delivered New York. On comb honey state quantity, quality, size, weight per section and sections to a case. Extracted honey, quantity, quality, how packed, and send samples. Chas. Israel Bros. Co., 486 Canal St., New York, N. Y.

FOR SALE—15,000 pounds of fine clover and basswood honey. The best offer takes it if satisfactory. Chester E. Keister, Clarno, Wis.

WANTED—Comb, extracted honey and beeswax. R. A. Burnett & Co.,
6A12t 173 S. Water St. Chicago, Ill.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendering. Fred W. Muth Co.,
204 Walnut St., Cincinnati, Ohio.

## FOR SALE

FOR SALE OR TO LET—Eastern New York farm, suitable for bees, poultry, fruit.
G. H. Hawley, Castleton, N. Y.

FOR SALE—One Novice honey extractor; used but little, takes Langstroth frames; 1 Bingham uncapping knife; both for $10. One Doolittle solar wax extractor, needs new glass, $1. Will be shipped from Leon, Iowa.
Edwin Bevins, Alamogordo, New Mexico.

TO BEEKEEPERS that ship pound packages: I am acquainted with your troubles. It's early queens you need. I can fill your orders. A. B. Marchant, Jesup, Ga.

FOR SALE—Camera, 5x7 Graphic and outfit in A1 condition. If interested in a bargain, write for detailed description and price.
Walter Timmerman,
2107 North Tremont St., Kansas City, Kans.

FOR SALE—Cedar or pine dovetailed hives; also full line of supplies, including Dadant's foundation. Write for catalog.
A. E. Burdick, Sunnyside, Wash

FOR SALE—38-35 Marlin repeating rifle, $25; excellent condition. Will trade for honey extractor; must be in good shape, not smaller than size 15.
L. C. Johnson, Rio, Wis., R. 3.

WANTED—An experienced man for 1920 to work outyards for bulk comb honey References required.
John W. Cash, Bogart, Ga.

FOR SALE—"Superior" Foundation (Weed process). Quality and service unexcelled.
Superior Honey Co., Ogden, Utah.

## WANTED

WANTED—Young farmer, 20, strong, energetic, educated, with some beekeeping experience, wishes to work for successful beekeeper. Southern or Western States preferred. Arthur Wilson, Hammond, N. Y.

WANTED—A Cowan reversible extractor.
Harold Hicks, Long Lake, Mich.

WANTED—Small second-hand extractor in good condition and reasonable.
W. H. Hiller, Alluwa, Okla.

WANTED—Comb honey supers, complete; will take any style at the right price.
O. E. Timm, Bennington, Neb.

WANTED—Extractor, circular saw table, shotgun, rifle, camera.
Lorenzo Clark, Winona, Minn.

WANTED—10 hives of bees
J. H. T. Meurer, Hest, Mo.

WANTED—Partner with cash, part or whole time, beekeeping, poultry keeping.
Embleton, 5163 Somerville St.,,
Vancouver, B. C.

WANTED—100 or more colonies; also supers and equipment.
S. S. Thorpe, Braggville, Mass.

WANTED—Combs that are free from disease, drawn from full sheets of foundation, on the self-spacing Jumbo frames.
Ernest Peterson, R No. 2, Sandwich, Ill.

WANTED—Some bees in 10-frame hives from Oklahoma, Kansas or bordering States, to be shipped to me. C. M. Kell,
1128 Idaho Ave., Chickasha, Okla.

WANTED—For exhibition purposes, naturally built combs, partly or fully drawn out. Such combs should not have over 25 per cent dronecomb and should be the product of the bees themselves, without use of foundation. Write us describing what you have and we will name our price on same.
American Bee Journal, Hamilton, Ill.

WANTED—Your old combs, cappings or slumgum to render into beeswax by our high steam pressure wax presses.
Dadant & Sons, Hamilton, Ill.

WANTED—Your order for "Superior" Foundation. Prompt shipments at right prices.
Superior Honey Co., Ogden, Utah.

## SUPPLIES

FOR SALE—Comb honey supers. Don't miss your chance to buy your supers when you can get them nearly as good as new for half price of 1919 catalog.
Mrs. Anna Josephson, Box 121, Granville, Ill.

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WANTED—Second-hand 2 or 4-frame honey extractor; 12-inch baskets, steam uncapping knife with tubing, steam generator safety valve. F. S. Embleton,
5163 Somerville St., Vancouver, B. C.

FOR SALE—Good second-hand 60-lb cans, two to the case; used only once, 60c per case, cash with order. E. B. Rosa, Monroe, Wis.

FOR SALE—60 lbs cans, 2 in case, used but once, 40c a case.
Mason, Mechanic Falls, Me.

FOR SALE—Selling out bee supplies at 50 per cent less than present prices. Write for list. Hunkel Co., Milwaukee, Wis.

WANTED—About 20 10-frame hives, 50 extracting supers, hand extractor and general supplies. Stanthrop Farm, Holliston, Mass.

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Former Special Field Agent in Beekeeping, U. S. Dept. Agr., for California, Arizona and New Mexico.

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AN OPPORTUNITY is offered for young man or woman wishing to learn queen rearing, to work in Wisconsin, beginning April, with beekeeper whose experience throughout United States would be valuable asset to your future. X Y Z, American Bee Journal.

WANTED—Situation in extensive apiaries in Western States, Colorado or California preferred, by active man of 35; married, well-read; experience with small apiary only. Address H. A., Care American Bee Journal.

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WANTED—To correspond with beemen who can use black bees in gums with queens, or in packages without queens.
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| Select Untested | 2.25 | 9.50 | 18.00 | 1.75 | 9.00 | 16.00 | 1.50 | 7.50 | 13.50 |
| Tested | 3.00 | 16.50 | 30.00 | 2.50 | 13.00 | 22.00 | 2.00 | 10.50 | 18.50 |
| Select Tested | 3.50 | 19.50 | 35.00 | 3.00 | 16.50 | 30.00 | 2.75 | 15.00 | 27.00 |

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# Crop and Market Report

Compiled by M. G. Dadant

The shortage of sugar still continues, and its price has risen in the larger cities as high as 20 cents retail, though there is a stabilizing of the market at or near 13 cents.

Yet, with the shortage of sugar, there is not an excessive demand for honey. In fact the price has dropped off about one cent per pound on the California market. Orange honey is being quoted at 19 cents, sage at 18 cents and sweet clover white honey at 17 to 17½ cents per pound f. o. b. California common points.

The rate of freight is lower from California east than from interior points, as Salt Lake City, Phoenix, Ariz., etc., so that the price at these points would have to be shaded a little.

There seems to be quantities of honey in the hands of the producers yet waiting disposition. Beekeepers who were holding, expecting to realize 20 cents for their honey, net, would be glad to realize 17 to 18 cents.

Probably the greatest contributing cause of this is the lack of demand on the part of European countries. The demand from there has greatly fallen off. England is now able to import from its colonies, and large amounts are being received from Australia and New Zealand. In these countries the price of honey has ruled relatively low throughout the war, owing to lack of shipping space. Just now, we are feeling the effects of such honey competing with our higher priced products.

No doubt the prices will in time stabilize, though it is doubtful if we will, at least for some time, see honey approach the prices which have been realized by producers during the last two or three years.

Honey dealers and retailers report excellent demand for honey from the consumer, but the tendency is towards a cleaning up of all old stocks on hand before buying more. It may be possible that the price will stiffen when old stocks are exhausted and more honey is needed for filling current orders.

The larger bottlers seem to be fairly well supplied.

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**Including those important to the beekeeper as sources of pollen**

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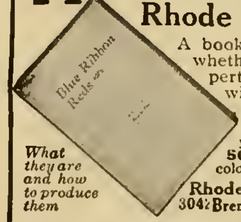

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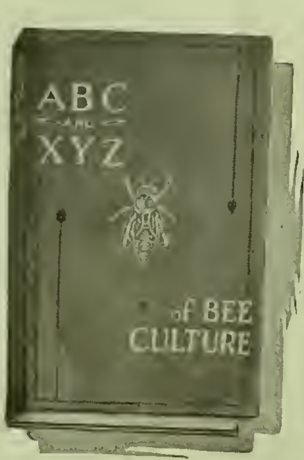

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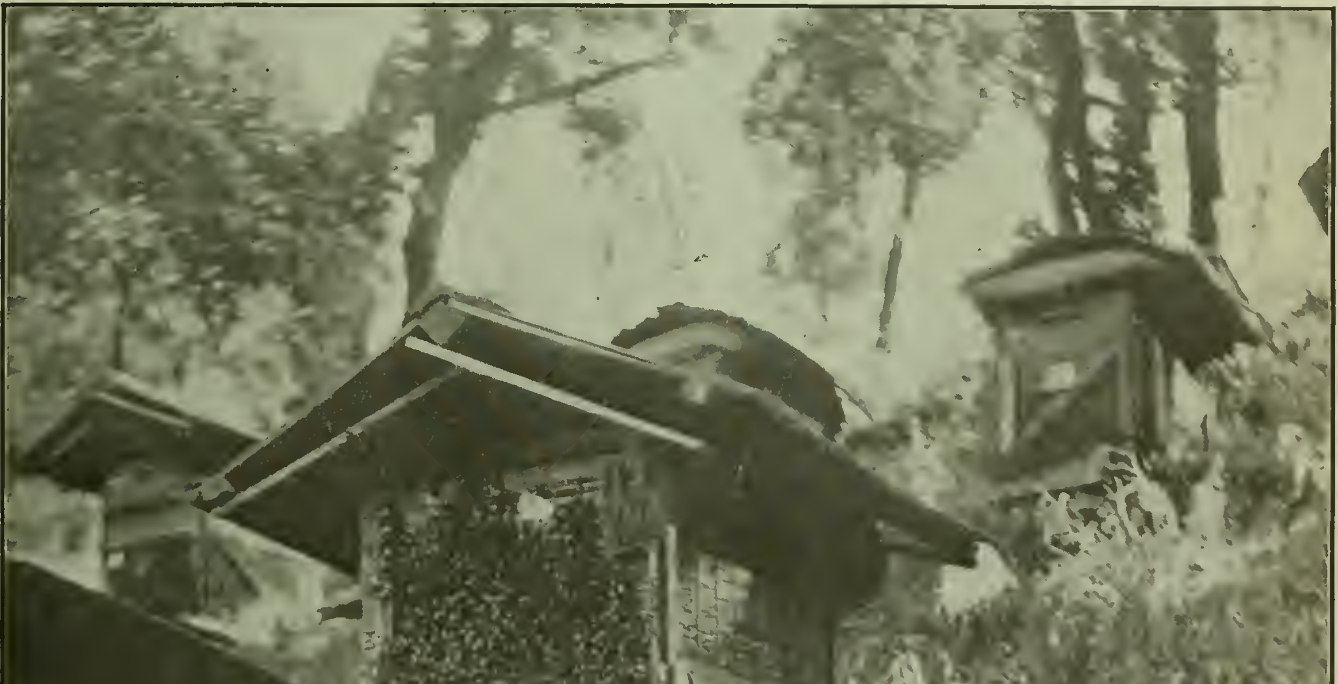

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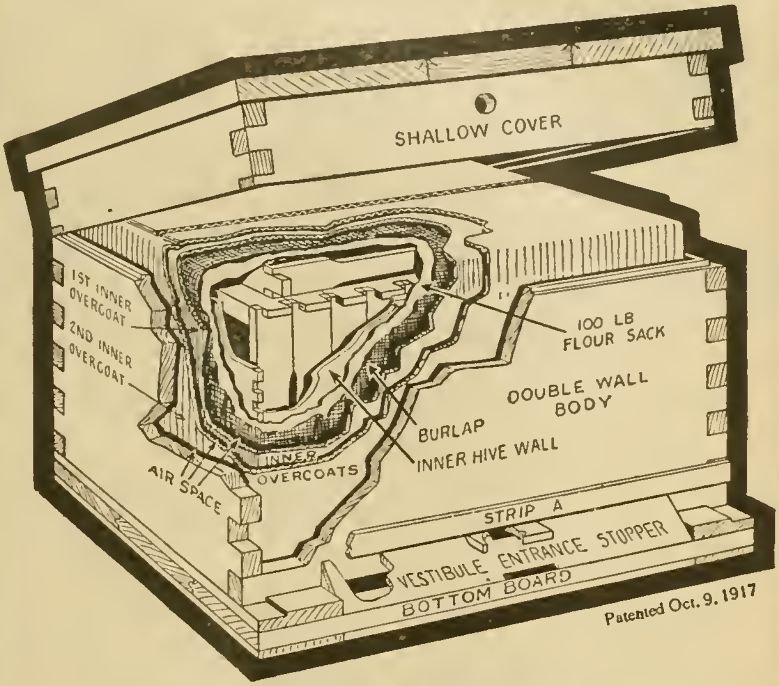

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AMERICAN BEE JOURNAL

VOL. LX—NO. 2 HAMILTON, ILL., FEBRUARY, 1920 MONTHLY, $1.00 A YEAR

# SECURING COMBS OF WORKER CELLS

## An Explanation of the Failure of Getting Well-Drawn Combs With Requisites for a Maximum of Worker Cells from Foundation

By M. G. Dadant

ONE question much agitated at present is that of large vs. small hives, and one of the demands for the large hive comes from the fact that it will ensure, for the most prolific queen, ample breeding room.

But are we even using the hives we have at present, as the regular Langstroth ten-frame hive, to the advantage we might? We are not. At least there are many beekeepers whose colonies are restricted to possibly three-fourths their size by the large amount of drone comb in the hives.

In the early days, when foundation was first introduced, its appeal lay in the fact that it would insure straight combs; a secondary consideration was that it would eliminate drone comb by the use of full sheets, and a third, that it would save much work to the bees in the production of wax if used in full sheets.

The first of these considerations was promptly adopted, the third is fast replacing the starter with the full sheet of foundation. But the second consideration, that of minimum drone comb, has not received the attention it should have.

The Gates imbedder should replace the usual spur.

A questionnaire to several prominent beekeepers brings the reply that they secure perfect, or nearly perfect, combs from full sheets of foundation, and one, Mr. N. E. France, states that if this is not secured the fault lies with the beekeeper, and not with his materials, even as in the earlier days, before comb-foundation was used, the successful apiarist got maximum worker comb by going over all his combs, cutting out the drone cells and replacing the same with worker cells, whereas the less careful left the combs as built by the bees.

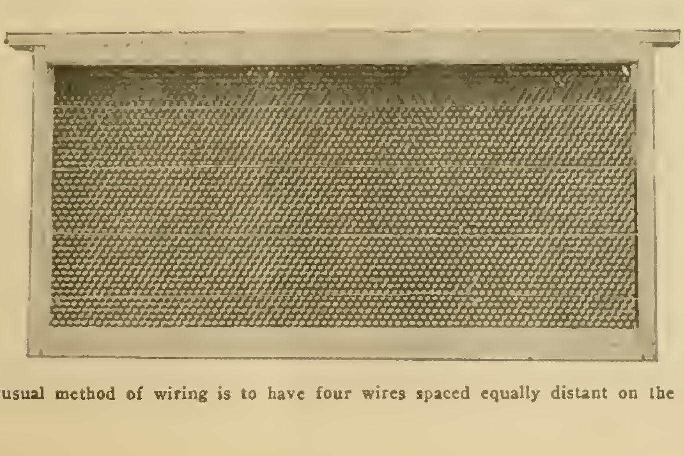
The object of this article is to give some reasons for failure to secure perfect combs and some points on proper procedure in effecting the desired end.

### The Foundation

The foundation, in the first place, should be as perfectly made as is possible. There should be no stretched cells through improper manufacture. Fortunately, this has been practically eliminated by modern methods of manufacture. Virtually all foundation on the market is free from this defect.

But there is too much tendency today to replace the heavier foundation weighing one pound for six or seven sheets, with that running nine or ten sheets to the pound. Messrs. Jacquays and Bartlett, of Michigan, have in the past few years drawn out many thousands of combs on different weight foundation. They have had very little trouble with that running seven sheets to the pound and very much with the lighter grades. Six sheets to the pound would be even better. E. L. Hoffman, of Minnesota, is of the same opinion.

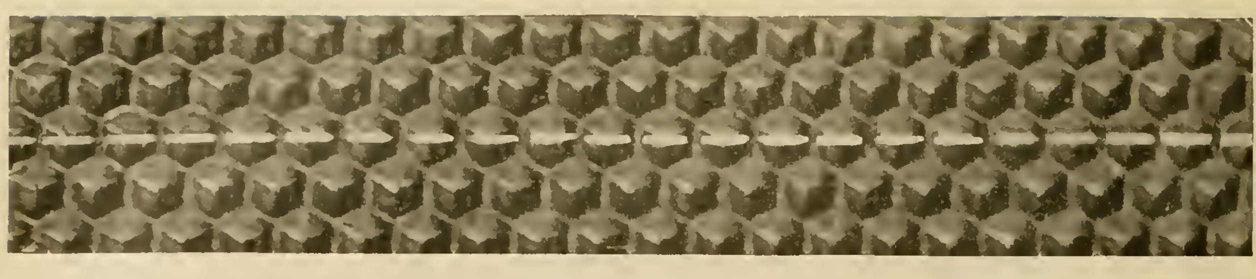
N. E. France, among others, has had success by painting the upper half of each sheet of foundation with hot wax after the plan of H. Vogeler. Nearly all stretching comes in the upper half of the sheet, and this stiff congealed wax helps prevent it.



The usual method of wiring is to have four wires spaced equally distant on the frame.

### Wiring the Frames

Without exception, wiring of frames is considered necessary. At different times, both vertical and horizontal wiring have been recommended. The vertical wiring is much more difficult, on account of the heavy top-bar and narrow, thin bottom-bar. Moreover, the foundation has a tendency to "buckle" between such vertical wires in the hands of



The electric imhedder cements the wire into the foundation so that it is removed with difficulty

any not expert with this mode of wiring.

Edward G. Brown, of Iowa, uses vertical wires with diagonal wires in addition, and has no trouble. However, no more than four horizontal wires are needed, if properly placed and properly put in.

The first wire should be very close to the top-bar, probably half an inch from it, the second probably one inch below this, the third an inch or so farther down, with the fourth wire wherever the beekeeper desires, so that it may prevent side shake of the sheet and otherwise do the most good.

In times past, slack or loose wires have been advocated by some. They are, at the best, bad practice. Have your wires taut, and imbed your foundation soon after wiring. Otherwise they may cut into the side bars and loosen, necessitating re-tightening before using.

Wiring devices on the market today make for ease in such wiring. There is no excuse for the many slipshod manners of introducing foundation without wires or with one or two wires improperly fastened, run in loose or so fastened as to make the foundation buckle.

Doctor Miller, many years ago, became dissatisfied with ordinary frame wiring, and has used with success the "foundation splints." They are of sufficient importance to warrant a short description and method of use as given by him in the American Bee Journal.

"The splints, or little sticks, are one-sixteenth in. square, and one-eighth in. shorter than the depth of the frame, inside measure. The paraphernalia needed to do the work are: A pair of pliers to lift the sticks out of the melted wax, a board to use as a presser, one-quarter in. shorter than the inside depth of the frame, or 3 or 4 inches wide and one-quarter or three-eighths inch thick, with one edge kept well soaked in water, so the wax will not stick to it, and a board seven-eighths inch thick, just large enough to slip loosely inside the frame, having strips nailed on the sides as stops so that the foundation will rest on the board while the frame rests on the stops. Put a bunch of the sticks in the heated wax. They will froth up at first because of the air and moisture in the wood. In a little while that will be cooked out and the wax will settle down clear. Then, with the pliers lift a stick out of the wax and lay it on the foundation, and with the wet edge of the presser press it into the foundation. Being hot it will melt its way into the foundation, and if pressed too hard or too long, may cut the foundation in two. A little experience will enable you to do it right. It is perhaps well to heat the wax but little more than enough to keep it melted, for if too hot there will not be so good a coating of wax on it, and if you use a stick not coated with wax at all the bees will dig out the stick. The sticks are put perpendicularly, one about an inch from each end, one in the middle and one on each side of the middle one, half way between it and the end one."

But the beekeeper is apt to consider this method too long, and the added objection has been raised that where not done perfectly such method may produce "wavy" combs.

### Fastening the Foundation

Some few urge that foundation should not be fastened to the top-bar. We do not agree. If properly supported by the wires, fastening to the top-bar will be an added support.

But it is imperative that wires be properly fastened to give best results. The spur wire imbedder is a very poor makeshift. It presses the wires into the foundation but does not perfectly imbed them. The wire cuts through the cell walls of the foundation in one line; the spur points damage the walls in two other lines, making for a greater weakening of the foundation.

Electrically imbedded wires are best. The wires should be heated just to the point where they will sink in to the midrib of the foundation and not cut through, while the melted wax will congeal over the wires in the cell walls and "cement" them perfectly.

For the smaller beekeeper the instrument brought forward by Burton N. Gates and A. C. Miller is desirable. It is a small tool with a metal point made with a groove to fit over the wire. This tool is heated and melts and presses the wire into the foundation. Unfortunately, this tool is not on the general market.

### Drawing Out the Combs

Granted that we have the proper foundation well fastened in good frames wired in an approved manner, we still have a slight chance for sagging if such frames are not introduced in a desirable place in the hive.

Never give full frames of foundation to a new swarm. The heat of the mass of the bees, together with their weight is too great a strain to put unnecessarily on the new comb.

The very best place to have these combs drawn out is over the brood chamber, without excluder between. This not only does away with sagging but insures comb being built to the bottom-bar perfectly.

They may be placed below in the brood chamber if the Demaree plan is used, putting all but one frame of brood in the super above. This relieves the foundation of the bulk of the weight of the bees and of much of their heat.

Such combs are also best built out in a light flow rather than in a heavy one.

### Conclusions

Get well-made frames, put your wires in tightly with most of them close to the top-bar, use heavy foundation, not more than seven sheets to the pound. Imbed the wires by a hot tool or by electricity, with the foundation well fastened to the top-bar. Introduce the frames in the super of your colonies, preferably in the center of the super, during a light honey flow, and you will have a maximum of worker comb.

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## Producing Perfect Combs From Foundation

By G. C. Greiner

DURING the last 12 or 15 years, since beekeepers have found out that the use of foundation is one of the best paying outlays in the production of surplus honey, I have not used a frame in my hives without a full sheet of worker-foundation. Consequently I have practically not a comb in use that is not in every way perfect. Of course, it requires a little experience to become familiar with the peculiar points of its nature. When I first began to use it I made some blunders, that resulted in more or less undesirable combs but with a little experimenting and observation I soon found ways to avoid them, and today I would have to look some time to find a really bad comb among my outfit. And it is not only in the brood-chamber where perfect worker-combs are desirable, but they are of as much importance in the extracting super as anywhere else.

The main point in producing perfect combs (stretching next to the top-bar is one of the most annoying faults to be avoided) is the use of the right material and the proper wiring of the frames. At the beginning of my foundation experience I used, for economy's sake (?) light brood foundation only, which gave me many buckled, undesirable combs. The next season I tried the heavier kind, the medium, and to compare the results under like conditions, I used both kinds side by side. The advantages of the heavier grade were so strikingly plain that I have used no other since.

At about the same time, when my experience with foundation was still in its infancy, I committed another great blunder. Trying to do something extra nice, to have combs solidly attached to sides and bottom-bars, I fitted the sheets into the frames without allowing sufficient space for stretching. I hardly need to tell that I practically spoiled a season's supply of foundation; almost every comb was a disgrace to any well-kept apiary. T allow for stretching, the inserted sheet of foundation should have one-quarter inch space at the sides and from one-half to three-quarters at the bottom.

Another mistake I made in wiring the frames. Years ago, when I was looking for instructions along this line, I found among our bee literature the advice to string the wires quite loosely; if strung too tightly it would cause buckling. Although I could see no reason why this should be so, I tried to reap some benefit from the experience of others and wired my frames accordingly, including the fourth wire near the top-bar.

For a number of years I was annoyed, the same as we hear others complain, with one or two inches of stretched, oblong cells, unsuitable for brood, next to the top-bar. To overcome this trouble I changed my method of wiring; instead of using No. 30 wire, I used No. 28, and then gave them all the tension the wire would bear, even at the risk of breaking one now and then. This settled the wire into the end-bars all it ever would or could, and sprung them perceptibly towards the inside of the frame. The reaction of their spring acted as an automatic wire-stretcher, keeping them tight under common climatic changes and supporting the foundation while being drawn out. I am not positively sure that tightening the wires was the only means of preventing the stretching of the cells next to the top-bars, but as I have very little trouble with oblong cells of late years it may have something to do with it.

Another change I made in wiring was leaving off the top wire. Outside of being less work to string three instead of four wires, I could see no necessity for having a wire so near to the top-bar. What makes foundation stretch above is the weight below. I do not remember ever having seen oblong cells when using narrow starters. If that top wire was added at proper distances to the lower ones, to help support the weight of foundation with its adhering bees I believe it would do more good towards preventing oblong cells than when placed near the top-bar. The main object of the wires is to keep the foundation in the center of the frames; being securely attached to the top-bar in that position, a wire so near to it seems to be of little consequence.

The time of filling the frames with foundation may also have some bearing on keeping the foundation from excessive stretching. I always defer this part of my bee work as long as I can, or until warm weather sets in; it is then in better condition to be handled than during the winter. On really hot days, which are my advice for this job, in a sweltering honey-house with the thermometer at 90 or 100 degrees F., foundation will stretch as much as it ever will by the heat of the hive (unless it is an overpopulous colony, and to such foundation should not be given), and if fastened into the frame in that condition it may have a tendency to retain the normal shape of the cells with little or no stretching. Incidentally imbedding the wires is greatly facilitated under these conditions, especially if the spur-imbedder has to be used. Although I now use electricity for this purpose the spur-imbedder, when properly used, will give good satisfaction. I had no other for many years.

It is not a bad idea to always keep a few drawn combs as a reserve; they come very handy when needed. I have them drawn out whenever a good opportunity offers itself, either between evenly drawn and capped combs of honey in the supers, or in colonies that refuse to do their share in super work; it compels them to do a little something for their owner.

In summing up the foregoing I would caution every reader not to take too much stock in any of my assertions. I merely give my experience of past years with its results obtained. Conditions vary so much with different individuals that I cannot guarantee success to others; each one must work out his or her own salvation.

La Salle, N. Y.

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### Another Short Course

Doctor Phillips and his staff will conduct a short course in beekeeping at the University Farm, St. Paul, Minn., during the week of February 16 to 21.

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## Combs Spoiled by Streching—How to Avoid It

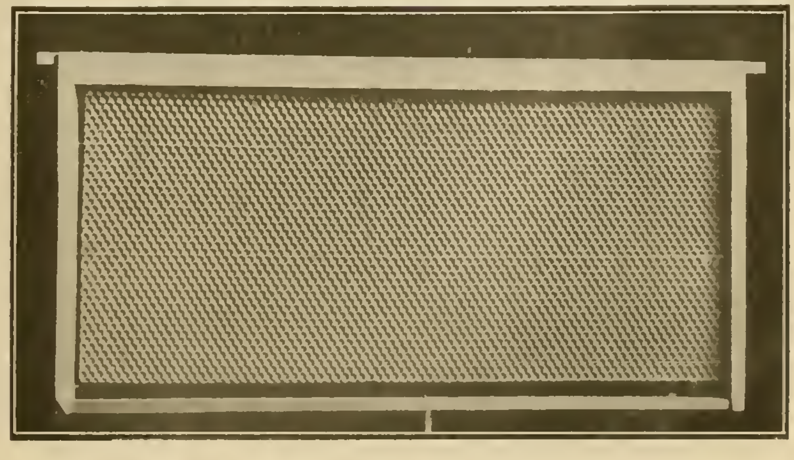
By Morley Pettit.

A CORRESPONDENT writes: "As you know, frames wired horizontally have one to two inches of comb at the top unsuitable for brood, and a remedy for this serious defect is one of the crying needs at present."

There is no doubt that this is a common fault of combs built on full sheets of foundation, and it is a serious one. It reduces by that much a breeding space which many consider already too small in the 10-frame Langstroth hive. It also makes a constant barrier of honey between the brood and supers, forming one of the chief talking points of the advocates of divisible brood-chambers. Furthermore, it is a needless handicap on the business, for by a better understanding and a closer application of the principles of comb-building the condition may be entirely avoided. It all depends on the support given to the foundation both during and after building. This, in common practice, may be wires in the foundation, and the shells left by a few generations of brood in the comb. Once the latter stage is safely reached there is not much danger of further stretching.

To begin with, the stock Langstroth frame is without wire where wire is most needed—near the top. Then, if a sufficient number of wires in the right place and well stretched are properly embedded, the foundation is better **not** to be fastened to the top-bar at all. A few years ago the most authoritative teaching in America was that wires should be slack to allow for the stretching of the foundation. This at one stroke did away with any benefit the wires might be. The poor foundation was like the elephant's nose in one of Rudyard Kipling's animal stories. He was relating how the elephant originally got its trunk. Some other animal grabbed it by the nose and pulled it until it stretched out long. It finally exclaimed, "That's too buch for be."

It has been generally taught that



The best wiring is to have the two top wires close to the top of the frame wires are used mainly to prevent the breaking of combs in extracting and in moving bees. Experience has shown me that they are of minor importance in the extractor, for if the comb-baskets are not well braced, wires will not save the combs, and if they are, wires are not necessary. It is entirely up to the manufacturer of the extractor. Wires will help prevent breakage of combs in moving, but the shells left by two or three generations of brood are worth more. I have used thousands of combs without wire in all parts of the hive, and for most kinds of migrating, and can say from wide experience that the main and perhaps only advantage of wires is to hold the comb in shape until it can be used at least once for brood.

It may be that the metal comb is the answer to this hard and very important question. Aside from that some system of wiring seems the most practical way of bringing the young comb through formative stages to a safe maturity, after which it may hope for a long and useful life, barring accidents and disease.

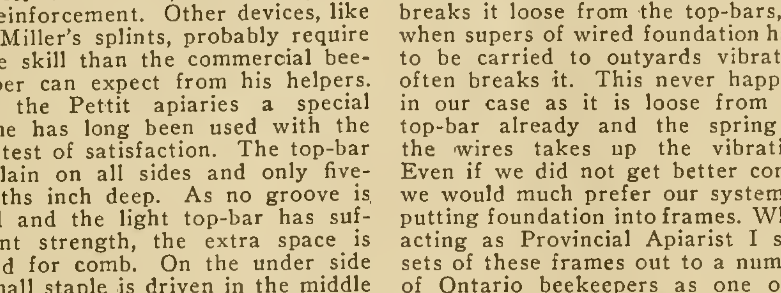
Vertical wiring looks good from the one standpoint, and has some strong advocates who are able to show beautiful combs. It has the objection of being different from what we are accustomed to and of requiring a heavier bottom-bar, or some system of reinforcement. Other devices, like Dr. Miller's splints, probably require more skill than the commercial beekeeper can expect from his helpers.

In the Pettit apiaries a special frame has long been used with the greatest of satisfaction. The top-bar is plain on all sides and only five-eighths inch deep. As no groove is used and the light top-bar has sufficient strength, the extra space is saved for comb. On the under side a small staple is driven in the middle before the frames are nailed up. The horizontal wires are placed closer together near the top than in the stock frame, and an extra wire comes just one-quarter inch below the top-bar being threaded through said staple for middle support. All wires are carefully strung as taut as can be without cutting into the wood. When foundation is put into the frame every wire is carefully embedded from end to end. If any wire happens to be slack in the frame it is sprung down in the middle, hammock-shaped, and carefully to avoid stretching of the foundation from slackness on the one hand, and buckling from too much tension on the other. The foundation is not fastened to the top-bar in any way. The bees make that their first duty.

Now what happens when the heat and weight of bees come on the foundation in the hive? As there is clearance between each sheet and its bottom-bar, the whole sheet may spring down slightly under the added weight of clustering bees. This does not cause stretching tension in any part as all wires can give slightly and to about the same extent. No rigid top-bar fastening has it by the nose. One, or possibly two rows of distorted cells may be built next to the top-bar, but that is all. The sheet of foundation is drawn out with cells quite as perfect as the manufacturer made them.

We believe that this system of wiring without fastening foundation to the top-bar gives a much higher standard of combs than the stock frame. But to our way of thinking the advantage does not stop there. In fact in designing the frame it was of secondary consideration. Having no groove and wedge to fuss with we can put in foundation twice as fast, and that is a job for the busy season. When foundation in frames has to be carried over winter, frost usually breaks it loose from the top-bars, or when supers of wired foundation have to be carried to outyards vibration often breaks it. This never happens in our case as it is loose from the top-bar already and the spring of the wires takes up the vibration. Even if we did not get better combs we would much prefer our system of putting foundation into frames. While acting as Provincial Apiarist I sent sets of these frames out to a number of Ontario beekeepers as one of a series of co-operative experiments and they were very favorably received.

But do not let the beekeeper fondly think his new combs are out of danger when all cells are safely built to normal length. The common practice of spreading combs in the extracting super, leaving it eight or nine instead of ten, is a fruitful source of stretched comb. Especially when they are new, the undue weight of honey this treatment requires them to carry, while also subjected to the weakening effect of extreme heat which usually prevails during a good flow, often causes the best wired combs to sag out of shape and be completely spoiled for brood chamber use.



The Brown system of wiring has proven successful, though it means much more work.

From the stand point of getting good combs, another important point is to never place or leave foundation in a hive except during a good honey flow, and **never place foundation in a broodchamber.** The former statement will be generally accepted, the latter may cause exclamation. I refer to the space which is so commonly found vacant or filled with drone comb next the bottombar. Combs built on foundation cut the right size and placed in supers under right conditions do not have this objectionable feature. It is probably caused by light or cool air or both coming in at the entrance. These improperly admitted will cause combs to be cut away; but that is another story.

In conclusion then, the remedy for stretched combs is a proper system of wiring whereby all parts of the sheet are adequately supported. We think best not to fasten it to the top-bar. Then avoid overloading new combs and if at all convenient have a few generations of brood reared in them under conditions whereby the cells would be used right to the top-bar. Finally use a rule graduated to show the size worker cells ought to be on the surface of every comb and reject from broodchamber use all which have more than two or three rows of spoiled cells, except that a total of drone comb equal to about one-half a Langstroth comb might be allowed in a broodchamber.

Ontario.

## New National Organization

As a result of the resolution passed at the Chicago convention of the National Beekeepers' Association at the 1919 session, calling for a conference of delegates for the purpose of formulating a plan of operation and adopting a constitution for a national organization of honey producers, a group of representative men met at Kansas City on January 6.

The following States and organizations were represented:

Prof. George H. Rhea, of Ithaca, N. Y., representing New York and Rhode Island. B. F. Kindig, of East Lansing, Mich., State Apiarist of Michigan, and President of the National Beekeepers' Association. Colin P. Campbell, Grand Rapids, Mich, representing the Michigan Beekeepers' Association. Clifford Muth, of Cincinnati, Ohio, representing Fred W. Muth & Co. Jesse D. Warren, Medina, Ohia, representing A. I. Root Co. E. S. Miller, of Valparaiso, Ind., President of the Chicago Northwestern Beekeepers' Association. F. J. Rettig, of Wabash, Ind., representing the Indiana Beekeepers' Association. Dr. A. C. Baxter, of Springfield, Ill., President of Illinois State Beekeepers' Association. L. C. Dadant, of Hamilton, Ill., representing Dadant & Sons, Hamilton, Ill. H. L. McMurry, Chief Apiary Inspector of Wisconsin, representing the State

Department of Agriculture, Marion, Wis. Prof. F. B. Paddock, of Ames, Iowa, State Apiarist of Iowa, representing the Iowa Beekeeper ' Association. E. E. Tyler, Columbia, Mo., President, and J. F. Diemer, Liberty, Mo., Secretary, and W. L. Wiley, Brunswick, Mo., of Missouri Beekeepers' Association. W. C. Collier, of Goliad, Texas, President, and E. G. LeStourgeon, of San Antonio, Texas, Manager of the Texas Honey Producers' Association. Dr. J. H. Merrill, Manhattan, Kans., State Apiarist, and Joseph A. Reinecke, Seneca, Kans., representing the Kansas Beekeepers' Association. Frank G. O'Dell, Omaha, Nebr., Director of Research, Capper's Weekly. C. B. Baxter, Leavenworth, Kans. R. W. Hardy, Nebraska, President Honey Producers' Association. A. E. Shellhorn, Billings, Mont., Vice President Montana Beekeepers' Association. Frank B. Terriberry, State Inspector of Apiaries, Salt Lake City, Utah. Frank Rauchfuss, Denver, Colo., Secretary Colorado Honey Producers' Association. Wesley Foster, Boulder, Colo., and Mrs. Cora D. Polhemus, Lamar, Colo., Director National Beekeepers' Association, of the Colorado State Beekeepers' Association. J. B. Ramage, Yakima, Wash., President Washington State Beekeepers' Association. C. B. Justice, Los Angeles, Calif., Manager California Honey Producers' Exchange. Chas. D. Mize, Mt. Hope, Kans., President Kansas Beekeepers' Association.

It was decided to organize an entirely new association, since there has been much dissatisfaction with the present National and its policies. The name of the new organization will be American Honey Producers' League. The plan of operation as agreed upon is entirely different from any similar organization. A point of particular interest lies in the fact that while teachers of beekeeping, State officials and dealers in bee supplies are admitted as members of the association, they are not permitted to vote. Control of the policies of the association are thus retained in the hands of the producers.

The policy of the organization will be to foster the development of the industry in every possible way, including the securing of uniform inspection laws, better marketing facilities, more liberal appropriations for educational work, legal protection for the beekeeper, standardization of supplies and a liberal amount of research work on the problems of the beekeeper in the various State institutions.

Since so many important beekeeping organizations were represented and the new plan avoids most of the things which aroused so much antagonism to former associations, it is confidently expected that the foundation has been laid for a new and powerful organization which will be able to do much for the industry. The organization was completed after a free and full discussion on the part of the delegates and the fullest agreement as to details. The following officers were elected:

President, E. G. LeStourgeon, San Antonio, Texas.

Vice President, George H. Rea, Ithaca, N. Y.

Secretary-Treasurer, Chas. B. Justice, Los Angeles, Cal.

Executive Committee — Frank Rauchfuss, Denver, Colo.; F. B. Paddock, Ames, Iowa; E. S. Miller, Valparaiso, Ind.

The constitution in full will appear in a later issue.

## Tulip-Tree or "Tulip-Poplar," as a Vernacular Name

By John H. Lovell

An important honey plant throughout the Appalachian hardwood forest region is the tulip-tree **(Liriodendron tulipifera).** A very common vernacular name in use for this species is "tulip-poplar," which is most objectionable from every point of view. The tulip-tree is not a poplar **(Populus).** It not only belongs to a different genus, family and order, but not improbably is derived from an entirely different stock. The name "tulip-poplar" is a misnomer, and it is often misleading in the extreme. Beekeepers not infrequently omit the word tulip and refer to the tulip-tree as poplar, sometimes corrupted into "popular." There is then no way of distinguishing, except from the context, this species from the true poplar, the species of which are numerous, common, and extend over a large area, inclusive of the tulip-tree. The name "tulip-poplar" should, therefore, be dropped both by our bee journals and beekeepers, and tulip-tree used in its stead. The name tulip-tree is preferable in every way, and there is no possible objection to its use. It is the name given in all the leading manuals of botany; the reader will look in vain for "tulip-poplar," either in the 7th edition of Gray's Manual or the Illustrated Flora of Britton and Brown.

The ecology of the tulip-tree and the poplars is entirely different. The poplars are wind-pollinated and the flowers are wholly nectarless, while the tulip-tree is insect-pollinated and a valuable honey plant. Hence it is very undesirable that the two genera should be confounded. The advantage of using the name tulip-tree is so clear that it ought to be sufficient to call attention to the above facts. Let "tulip-poplar" drop into deserved oblivion.

Maine.

## A Novel Swarm Catcher

The Hayck Brothers at Quincy, Ill., have their apiaries in a hollow between two hills. It is a protected situation surrounded by tall trees. Except for the tendency of swarms to cluster high in the tree tops it is an ideal location.

To overcome the difficulty of hiving swarms which take to the high elevations they have invented a novel swarm catcher, which is shown in the accompanying picture. At the lower end are steel spikes to stick into the ground when in use. A double pole about 25 feet in length can be extended to forty feet by means of a small rope and pulley. A swinging basket at the end holds the swarm. A similar pole with a hook on the end is used to jar the swarm into the basket when it is in place below the cluster of bees. It saves much climbing about to get down swarms and is indispensable to the beekeeper in such a situation who does not practice clipping his queens.

Hyack brothers' adjustable swarm catcher.

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# THE EDITOR'S VIEWPOINT

## Apiary Insurance in Switzerland

The Bulletin of the Romande Society of Beekeepers in Switzerland gives, in its November number, an account of the operation of the German-Swiss insurance against foulbrood. A detailed translation would be too lengthy, but a few facts will be of interest and may suggest something to our beekeepers.

The mutual insurance against foulbrood in German Switzerland was organized in September, 1907. In 1909, 7,000 members, owners of about 90,000 colonies, paid in indemnities 5,346 francs, or a trifle over $1,000. In 1918, 13,660 beekeepers, owners of 146,000 colonies, paid 4,104 francs. In ten years the insurance association paid 32,000 francs. The cases of foulbrood treated during that time were about 1,000. The mode of treatment consisted in what we call the starvation method, putting the swarm in an empty box for three days, then hiving it on foundation. The cost of insurance was 5 centimes (one cent) per colony, per year.

The Association received help from the Federal Council through a foulbrood law passed in 1909. It also received scientific help from the Bacteriological Station of Liebefeld, near Berne.

The result was the entire abolition of foulbrood in several of the Cantons. The Association has now a reserve fund of 20,940 francs. It proposes to continue the work.

Of course, Switzerland is a small country, where the apiaries are small and located at short distances from one another. Control of diseases is more feasible than in our country of immense distances. But there is something enticing in the results obtained. It is worth while for us to ponder over this.

Switzerland is the smallest and the oldest republic. It remained at peace, while surrounded on all sides by warring nations. It can teach them some good lessons.

## Good Samaritan Franco-Belgian Fund—Fourth List

| | |
|---|---|
| Total of former lists | $407.85 |
| M. H. Pierson, Dale, N. Y. | 1.00 |
| W. C. Furnas, Box 4, New Albany, Ind. | 2.00 |
| Edwin H. Grafton, 464 Hamilton Ave., Trenton, N. J. | 5.00 |
| Geo. E. Moss, Box 308, Souris, Manitoba | 1.00 |
| J. Roscoe Miller, 1129 S. First Montrose, Colo. | 10.00 |
| J. R. Case, Chico, Calif. | 5.00 |
| C. H. Stordock, Davis, Ill. | 5.00 |
| G. E. Lemon, Nash, Okla. | 1.00 |
| Orange County Beekeepers' Club, Orange Calif. | 25.00 |
| G. A. Barbish, La Crescent, Minn. | 2.00 |
| C. E. Foss, Alpine, Calif. | 5.00 |
| Sergeant W. R. Blackett, Army Building, Omaha. | 1.00 |
| C. W. Price, Spirit Lake, Iowa | 5.00 |
| Philadelphia Beekeepers' Association, J. R. Rambo, Secy. | 10.00 |
| Marcus D. May, Hinesville, Ga. | 5.00 |
| F. E. Schriver, R. 3, Grafton, Ohio. | 5.00 |
| W. D. Wright, Altamont, N. Y. | 10.00 |
| Clyde Mawhinney, Ravena, Neb. | 5.00 |
| W. H. Baynes, Salem, Ind. | 4.00 |
| Roderick Cameron, Decker Mich. | 2.00 |
| Leo Hoffstetter, Prairie City, Ore. | 1.00 |
| E. J. Bryant, 710 Walnut Ave., Elgin, Ill. | 2.00 |
| J. Mansfield, Elgin, Ill. | 1.00 |
| M. Moles, Elgin, Ill. | 1.00 |
| M. Salmond, Elgin, Ill. | .50 |
| A. Bloomfield, Marathon, Ia. | 2.50 |
| Miss Annette Ozanneau, Keokuk, Iowa | 1.00 |
| Robert Elwell, Rohoboth, Mass. | 2.00 |
| W. Muth-Rasmussen, Independence, Calif. | 5.00 |
| H. D. Baker, Knappa, Ore. | 2.00 |
| Jas. T. Fennell, 3rd and Arch Sts., Philadelphia | 5.00 |
| Name not to be published | 3.00 |
| Warren M. Fountain, Redding, Calif. | 2.50 |
| Fred Hutching, 473 6th Ave., Milwaukee, Wis. | 1.00 |
| J. W. Peterson, Box 139, R. 1, Puyallup, Wash. | 1.00 |
| E. S. Smith, Westville, Ind. | 1.00 |
| W. P. Hainsworth, North Andover, Mass. | 1.00 |
| F. X. Arnold, Deer Plain, Ill. | 5.00 |
| Total to January 8, 1920 | $554.35 |

Added to queen subscription:

Jay Smith, Vincennes, Ind.___12 queens

Much more cash should be subscribed to help buy bees in Netherlands.

The following letter was received:

I HEARTILY thank the eminent chief editor for his philanthropic ideas and warm zeal to carry on the Franco-American union by a call for subscriptions in favor of our poor destroyed regions, to rebuild in part the apiaries of northern France and Belgium.

Many years ago, in 1883, when I was just back to the Orient, from service in France, where I had hoped to help recover the lost provinces of Alsace-Lorraine, a beekeeping party assembled at Beyrouth, at the foot of the Lebanon. Most of the members present have been long dead and buried, but Frank Benton was there and brought to our attention American hives and instruments.

"Great streams from little fountains
flow;
Great oaks from little acorns grow."

In that assembly of Druses, French, Syrians, Greeks, Germans, Britons and Americans, Americanism was widely sown and American ideas were introduced.

You Americans are great for preparing machinery and supplying it to us Old World people. Everyone remembers that the Italo-Hungarian Hruschka invented the honey extractor. But the Americans are the great makers of extractors. Comb foundation originated in Germany, yet the Dadants, in America, are the leaders in that production. It is the same for all machinery.

The donations which you are now making, of queens, money, hives, etc., in devastated Europe, will propagate American ideas still more, even more than books would do, and will return benefits to you sooner or later.

Tie the French and American stripes still closer together. We gave to you when you were young and we were strong. Now that we are old and worn, the American stars are hovering over the broken-down regions renewing friendship and commercial ties.

Ph. J. BALDENSPERGER,
Nice, France.

### Fruit Trees by the Roadside

At the meeting of beekeepers in Nashville, in December last, a very interesting address was given by Major Lloyd C. Stark, of the Stark Bros. Nursery, concerning orchard growing in France. He was in the A. E. F. a long time and took note of different particular methods.

A custom that drew his attention was the immense number of fruit trees lining the highway. He said:

"In many sections of France, fruit trees are used to line all the highways. This is a practice that should be, and some day will be, carried on in our country. Think of the millions of acres now entirely idle that could be producing fruit here in America, if we planted hardy varieties of fruit trees along the state and county roads, to say nothing of the national highways. Many claim that it can't be done satisfactorily in this country, but there is absolutely no argument there. The French do it, and we are just as smart as the French. We have better varieties and as good soil and climatic conditions. Some day we will do it."

Planting of fruit trees along the highways would greatly increase the opportunities for bees to secure both pollen and honey in early spring. The beekeepers should urge it.

### Sixty Years in the Field

At the end of the present year, the American Bee Journal will have ended its sixtieth year. Its first issue was in 1861. The Civil War caused it to suspend publication until July, 1866. Six editors have managed it successively: Samuel Wagner, George S. Wagner, W. F. Clarke, Thomas G. Newman, George W. York and the writer of this. From a very obscure pursuit, beekeeping has changed in those sixty years to an occupation recognized as worthy of attention by colleges and other institutions of learning. Previous to the World War, scores of magazines were devoted to beekeeping, which suspended publication. Slowly but surely they are coming to life again, and we feel safe in predicting that honey production is to become an important branch of agriculture. Why should it not? Food conservation is urgent. Sweets are at a premium and likely to remain valuable, since the extension of prohibition. Honey, being the best and healthiest sweet, is sure of recognition everywhere. It is the only sweet which may be had readily, in large quantities, without cultivation, and while helping seed production and fructification. The future is bright for practical and intelligent beekeepers.

### Nosema Disease

We are in receipt of a bulletin of 22 pages on Nosema Apis, from John Rennie D. Sc., and Elsie J. Harvey, of the University of Aberdeen.

The experiences of these scientists practically confirm the views expressed by Dr. G. F. White that this disease does not produce heavy losses in apiaries, though it may occasionally cause the loss of colonies. It has probably no connection with Isle of Wight disease, or the so-called paralysis, though it may exist jointly with either of these diseases in the same colony.

### The Economic Entomologists

The apiary section of the American Association of Economic Entomologists met at St. Louis on Wednesday, December 31. It was a notable meeting, in that the officials in charge of beekeeping work in many States were present. Men from New York to Florida and Texas met together with the one purpose of discussing ways and means of elevating the industry of honey production.

Special plans were laid to make next year's meeting one of unusual interest and to eliminate from the program such matters as are discussed at the usual beekeepers' conventions. It is the plan to give place to accounts of research work in beekeeping and matters of special importance in educational and extension work. This organization gives promise of doing much for the beekeeping industry. One thing of immediate interest is the attempt to work out some general plan of inspection work which can be adapted to all States, thus leading to uniform laws. The great drawback to successful work in disease eradication, is that there is no co-operation between the States.

F. B. Paddock, of Iowa, was elected Chairman and G. W. Bentley, of Tennessee, was re-elected Secretary.

### National Affairs

The reader will notice the report of the National meeting held at Kansas City January 6 to 8. The importance of it is easily comprehended when one notices how many associations this meeting represented.

Attempts have been made before to organize a national producers' association. In 1903, at the Los Angeles Convention a very positive attempt was made to organize such a body. Two associations only were ready for this move, the Colorado Honey Producers' and the California National Honey Producers. The rest of the country did not yet feel the need of this.

At Minneapolis, in 1911, a very earnest attempt was made to reorganize the National Association on co-operative lines. However, some of the leading men of the association were antagonized, so that there was no united effort. The mass of the beekeepers were also indisposed to spend money on co-operation. Money is the backbone of co-operation. Without it no progress can be made.

The present action, we believe, is a move in the right direction. Several honey producers' associations are thriving in different States and each of them recognizes the necessity of union. Provision has been made for funds sufficient to carry on the work; if the different organizations in the United States support it. If too small a number back it, this time, it will be sure to succeed a little later. It is in the line of progress. Beekeepers cannot afford to neglect that which has proven of benefit to many other lines. A Nationay Association has existed for 50 years. It is time that something be done by it more than discussing natural history or honey production.

### Plagiarism

The British Bee Journal, in its December 4 number, copies **verbatim** our translation of L'Apicoltore Moderno's article on "Cryptograms" published in our September number, page 305. This translation cost us some effort. Since it was easier to borrow it from us than to translate it from the Italian, we believe the British Bee Journal should have given us credit for the translation.

# SOME TEXAS HONEY PLANTS

## Notes on the Sources of Nectar in the Southwest, Where Every Bush Has Thorns and Where Little Honey Comes From Cultivated Crops, Excepting Cotton

By Frank C. Pellett

COTTON is an important honey plant in a large area of Texas, but since we have already devoted a considerable space to the consideration of the cotton plant as a source of nectar (March, 1919 issue), it will be passed over here. To the beekeeper from the North, where the chief sources of surplus are from cultivated crops, such as alfalfa, clover and buckwheat, things seem a little topsy-turvy in Texas, where but little dependence is placed on cultivated crops for honey. Even cotton fails to yield to any marked extent on the light soils south and west of San Antonio. The writer greatly enjoyed several weeks of travel among the beekepers of the Southwest in 1918 and found it difficult to understand how the beekeeper could make sure of getting his colonies ready for a honey flow that was very uncertain as to its time of arrival. Many of the desert plants bloom at irregular times, depending upon the rainfall, rather than upon the season of the year. In wet seasons they may bloom two or three different times, and short honey flows may be expected at almost any time following a good rain. One beekeeper in Uvalde County stated that he seldom had a good crop at all his different yards in the same season, as local showers would bring on a good flow at one yard when no honey would be available at a yard a few miles away.

### Mesquite

The mesquite is the largest and most important tree on the uplands over hundreds of square miles of country. It ranges from Oklahoma and Texas westward through New Mexico and Arizona to California. The trees have much the appearance of neglected fruit trees, and one may ride for many miles through what would seem at first sight to be a big peach orchard. The trees do not grow close together tall and straight like our forest trees, but scattered about and branching like trees in an orchard.

To the natives of the old Southwest mesquite was extremely important. Cattle and sheep fed freely upon the pods and leaves, while the Indians often ate the pods themselves. The seeds were often ground into a sort of meal, while the trees and stumps furnished fuel and the blossoms served the bees as an important source of nectar.

Acacia amentacea.

Mesquite is the most important honey plant of the arid Southwest.

Mesquite is very probably the most important honey plant in all the Southwest. The honey is of a light amber color and good quality. Beekeepers living in Texas reported to the writer that the honey is lighter in some seasons than in others, and that this is the case when no other plant blooms at the same period, so that the difference cannot be laid to the mixture with honey from other sources. They reported also that it yields more regularly on light sandy soils than on heavy land. The first blooming period usually comes in April, followed by a later one in July. If there is plenty of moisture it blooms profusely. Mesquite is the source of immense quantities of honey and except in cases of excessive drought seldom fails to yield something, although in portions of its range it does not yield regularly.

### Huajillo (Wa-he-ya)

The beekeepers of the Southwest boast of the quality of the huajillo honey. Huajillo is one of the acacias **(Acacia Berlandiera),** but apparently

Acacia Greggii.

not of wide distribution. Coulter gives the range as "from the Nueces to the Rio Grande." The honey is white and of mild flavor and in favorable seasons is stored in great quantity. Many carloads of this honey have been shipped from Uvalde, Texas, and nearby points. In the Uvalde region, every beekeeper visited spoke of huajillo as of first importance, although many spoke of it in connection with catclaw, and did not seem to know which was the more important. A rain while in bloom stops the flow and the beekeepers report that the flow is more often cut short because of rain than for the lack of it. With a little moisture present in the soil the desert plants bloom freely, and in this region it does not require much water to bring out the bloom.

### Catclaw

The catclaw **(Acacia greggii)** has sharp curved thorns shaped like cat claws, hence the name. It is common all over southwest Texas, southern New Mexico, Arizona and south into Mexico. It is one of the main sources of surplus honey in this region. The catclaw is a small tree which is sometimes called Paradise flower, or devil's claws, names of rather opposite significance. At Brownsville local beekeepers state that catclaw begins to bloom in February and is the source of some early honey. At Mercedes beekeepers report that it fails in extremely hot weather. The first flow comes in April, with a second in July. At Mathis the first flow from catclaw sometimes comes as early as March. Beekeepers at this point report that in a normal season they expect 100 pounds of surplus per colony from catclaw, mesquite and huajillo. There are few places which the writer visited between Brownsville and San Antonio where the beekeepers did not mention the three plants together. Apparently the flows interlap and the honey is so mixed that they are unable to determine, in most cases, just what proportion should be credited to each of the three sources. One did not get far west, however, until mesquite was reported as uncertain, and the honey was mostly credited to catclaw and huajillo.

The round-flowered catclaw **(Acacia Roemeriana)** is also common throughout south and west Texas. It is said to be an important source of honey, also, but the tree is not as common as the first named species.

Another species, **Acacia amentacea,** grows in the same region, but Scholl reports that it is not of importance as a source of honey, though the tree is plentiful in southwest Texas. He reports it as the source of pollen principally.

### Como and Gum-Elastic

There are three species of Bumelia common in south Texas. Coma is the Mexican name for the southern buckthorn **(Bumelia lycioides),** which is to be found from Virginia south to Florida and west to Arkansas and Texas. In south Texas it is considered very valuable as a source of nectar. There is another species **Bumelia angustifolia,** which is common from Pearsall to the Rio Grande, and which blooms from October to February. H. B. Parks, considers this the most valuable species. Probably few beekeepers make any distinction between the two, since both are called "Coma," or "Como." In the region south of San Antonio one hears como mentioned as one of the principal sources of honey. In the Rio Grande Valley it is reported as yielding for as long as six weeks in late autumn and winter. Grant Anderson states that he has known swarms to issue as late as December and yet get sufficient honey from this source to carry them through the winter. The honey is light amber and of good quality. The flow is reported as uncertain, depending upon the rains.

The gum-elastic or shittim wood **(Bumelia lanuginosa),** also sometimes called Arizona buckthorn, is also common in that region and yields honey freely. There are reports to the effect that surplus honey gathered from this source along the Trinity River sometimes sours in the combs after being sealed.

The bumelias are small trees with very hard wood and with small white flowers scattered along the stem as shown in the picture. Some species have spiny branches. The fruit is small and black and somewhat resembles a cherry with a large ovoid seed.

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## Instinct and Reason

By J. E. Crane

IN my youth I remember reading about "Reason and Instinct." Reason, it was said, was the attribute of man, while the lower orders of life are governed by instinct. This is doubtless true in a general way, and yet, if we study the subject carefully we may find that neither man nor what we are pleased to call the lower orders of life have an entire monopoly of either instinct or reason. The infant of a few days knows how to draw nourishment from its mother's breast without thought or reason, and if in pain or discomfort, from any cause, it makes it known by crying. Both these attributes appear to be purely instinctive, and are necessary for the preservation of the life of the child. It has had no time to learn. The life of a bee is very brief during the active season, and as a consequence it must know instinctively what to do and how to do, if the colony is to survive. But in the brief time in the life of a bee it has

The round-flowered catclaw (*Acacia roemeriana*).

an opportunity to learn many things and to think or reason, or do something akin to reason. When old enough it leaves the hive, by instinct no doubt, in search of honey and pollen. By instinct, when loaded, it returns to the hive in the most direct way which we call a "bee line." But should a hill intervene or a heavy wind bother, the bee often appears to reason that it is easier to leave the bee line and return in a somewhat round-about way around the hill, or in the lee of forest.

The preparation for swarming by starting queen-cells is doubtless the result of instinct. But when a queen is superseded, is it by instinct, or reason? If by instinct there would be few exceptions, it would seem; but there are so many times during summer when an old or worthless queen is allowed to remain at the head of the colony that we are inclined to believe that where supersedure occurs it is the result of reason rather than instinct.

A most striking and interesting illustration of the power of thought and reason over instinct in bees is found in the rearing of brood. With the return of warm weather, after the long months of cold, the opening of flowers, the constant loss of bees from old age, the instinct for rearing brood is stimulated to the utmost. Yet, should the honey stored in the hive the previous year be getting low, with little or no honey coming in, the instinct for rearing brood is curbed, and reason seems to be the controlling factor.

I remember the first colony of this kind that I discovered, some fifty years ago. I had been watching it with a great deal of interest through the early spring, opening it at frequent intervals, and noting how fast the combs were being filled with brood, when brood-rearing suddenly was halted, and my visions of a powerful colony early in June began to vanish. What could be the cause? Noting the short supply of honey in the hive, although they may have been a few pounds left, the cause of the decreased brood-rearing was accounted for, and I was filled with surprise and emotion that the bees had been so much more thoughtful than I had been. If honey is coming in in small quantities every day they will consume it in the hive in brood-rearing almost to the last ounce.

We may well believe that by instinct the young larvæ know how to take their food, and when grown spin their silken cocoon with their heads to the mouth of the cell. Perhaps one in a million will allow itself to be sealed up with its head to the base of the cell. This shows that there are exceptions or mistakes even with instinct as the guiding force.

By instinct the mature bees know how to prepare food and feed the young larvæ, when to withhold food and seal the cells that they may take their long nap undisturbed. Instinctively they know how to rear a good queen, a little trick that has taken many beekeepers a long time to learn, with all their reasoning powers. By instinct they know how to gather the tiny bits of nectar, reduce it to the proper consistency and seal it; also secure a supply of pollen for a season of scarcity.

Instinct teaches the queen to lay but one egg in a cell and the workers to rear but one larva in a cell; but it sometimes happens that the queen will lay more and the workers try to raise more than one in a cell, which again shows that instinct is not infallible.

Instinct teaches the workers how to prepare their wax and build their beautiful combs so perfect that no mathematician can hope to improve upon their design. So wonderful a thing is this attribute of bees that we call instinct, we cannot help inquiring what it really is. Is it anything but the knowledge and skill given them by their Creator untold generations ago, perhaps when "the morning stars sang together," and this knowledge and skill has been handed down unimpaired from generation to generation through the tiny egg that the queen lays with one end attached to the base of a cell?.

Is there anything in the material world about us more wonderful than this?

When a young bee first leaves the hive it has to learn its location and way back to it as truly as a child has to learn its A-B-C's or to talk; so it would seem that bees learn and think where they have time to do so, but of a large share of their activities they have no time to learn, and instead have been so richly endowed with instinct that they are able to fulfill the great work for which they were created.

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Mary had a swarm of bees,
Who just to save their lives,
Went everywhere that Mary went,
Because she had the hives.

Blossoms of huajillo (pronounced wa-he-ya).

# TOULOUSAN BEEKEEPING

## Old Methods and Prejudices in Southern France

By Victor Dumas

TOULOUSE is a city of a quarter million inhabitants. As she spreads gracefully in a narrowing valley and upon the western slope of the steep hills, on both shores of the river Garonne, her houses might be reflected in the stream, were it not that the stream is too rapid, too rapid even to reflect in its waters the blue sky above, which is not always as blue as it is reported to be.

Toulouse is known especially for her "Academy of Floral Games." This name is due only to the fact that flowers of gold or silver, or gilt, are awarded to the most harmonious recitals of the poets, who compete for these prizes. It has nothing to do with the verdure of its landscapes.

This preamble is meant to impress upon the reader the fact that, in describing beekeeping in this region we may not give him the idea that this fine city is but an obscure county seat. The vicinity is quite favorable to apiculture. The soil is fertile; the rainy season more satisfactory than in the Mediterranean region; the crops of alfalfa and esparcet are well distributed through the country; basswood trees are numerous in the public avenues and in the parks; finally, the black locust is found plentifully on hillsides and in groves.

The winters are mild, the thermometer often up to 60 degrees F. towards the end of December and averaging from 18 to 30 degrees in January. If the months of July and August did not sometimes give us as high as 100 degrees, and if they supplied less wind and more rain than we get usually at that time, all would be for the best.

We have a "Societe Meridionale D'Apiculture," which, I acknowledge, I never joined. It is composed mainly of priests, physicians, dwellers of chateaux and other amateurs, with but few lawyers. Evidently the latter realize that bees are beings of action and not of speech. The president is past 80. Very few educated men of that age, in France, are without an honorary position of this kind. We evidently attach to them a reputation of experience and show our respect through a tribute of honor which old people readily accept.

We are certainly, in France, like a colony of bees which does not grasp the necessity of superseding its queen. I do not mean to apply this to the present case, for this president, through his love of the bee, his devotion to the cause of beekeeping, deserves his honorary position.

Not one of the members, that I know of, is a professional apiarist. The priests, village curates, are among the best members. Some of them own as many as 30 colonies, and one of them even owns an outapiary. A couple of doctors and a few agriculturists, with perhaps a dozen hives each, make up the remainder.

Como (*Bumelia angustifolia*) is abundant in southwest Texas and blooms from October to February.

The association owns an experimental apiary in the outskirts of the city. At last accounts it was composed of 3 colonies in movable-frame hives.

The principal results of the society influence in apicultural expansion, appears to be found in a series of trials in beekeeping, vestiges of which are seen in the chateaux of the vicinity, often in the shape of a few empty hives in an attic; or under the trees of a grove; perhaps a hive partly hidden in the grass, with its cover upside down, indicates that the fear of stings prevented the returning of it in its place.

It is thus evident that, as to the quantity of beekeeping and honey production, the peasant holds the record. Yet in many cases, the number of empty skeps is in proportion of ten to one to the live colonies. But nevertheless, each of these men, being a "fatalist," readily decides that it is all a matter of luck and does not hesitate to give a lecture in beekeeping which I must hear.

One must not storm or swear about the apiary, nor annoy them by poking in the hives with a stick, for they would inflict upon you many bad stings, the worst of which are inflicted by the "abeillauds" (males). To cure stings you should rub the wound with four different leaves. Beemoths kill them. They die also if you sell them. But you may exchange them for wheat or thanks. You must not harvest the honey at any time except at Candlemas, or they will die. They will die as readily if toads come near them; but they will die most assuredly if you have not the "gift" to handle them, of if you do not put them in mourning in case of a death. In short, it makes one wonder why, when a man knows all these conditional requirements, there is any excuse for any of them to die at all.

It is well, however, to state that, at least, they have ceased to brimstone the bees for their honey, as they used to do. Occasionally they come to ask me to help remove a colony from a tree trunk. I might point to them the possibility of using a wick of brimstone, but it would not be safe. I prefer to introduce the bees into one of my movable-frame hives, which they commonly call "drawer-hives." The most interesting thing they can see in a "drawer-hive" is the possibility of having a pane of glass on one side of it, so that they may be able to look inside. Any respectable modern hive should possess such a pane of glass. But as for the frames, they consider them only as impediments, obstacles to the free work of the bees. When a countryman happens to find one of these hives in the rubbish of a chateau, as he does not attempt to use comb foundation, the bees follow their own devices and the entanglement of combs and frames makes

Baptist Beck, three score and ten years of age, with his bees.

a damnable arrangement from which, although the honey will leak at the least attempt at removal, it becomes posible to secure almost anything but honey.

So they come back to the old skep or "buc," as it is called here, a hive made of 4 boards 10 or 12 inches in width and 3½ to 4 feet in height, with two sticks crossed, near the center, which are supposed to separate the brood chamber from the super, for it is there that the avidity of the honey gatherer is understood to stop, when the time comes to remove the honey. A board at the top and a tile under the bottom, with a few holes bored on one side near the bottom, for entrance, finish up the "buc."

Do not imagine, however, that the building of such a hive is a simple matter. You must use boards of poplar, cut during the dark of the moon, else the moths will destroy your bees. On the principle that "good soups are made in old pots," an old "buc" is better than a new one, for a new one may not please the bees, while an old one has been tested. Bees are queer beings, that is why each colony makes different honey.

If you figure out the differences in the bees, in the age of the "buc," the influence of the moon, the quality of the wood, you will acknowledge that beekeeping under these methods is an art. A man is courageous, indeed, who manages to keep bees under such Chinese-puzzle conditions.

As for the movable-frame hive keepers, the greater number use the Layens horizontal (long-idea) hive, or the Dadant-Blatt. Others, still, use hives of their own devising, high, or long, or wide, or with frames crosswise, a mixture of models which would be impossible to manage if they tried to do anything with them outside of harvesting the honey. No wonder that, often, the peasant gets more results from his "buc" than from the modern hives.

## Letting a Pocket in the Hills Fulfill Its Destiny

Florence L. Clark.

OH, the most wonderful thing I ever saw over on the island yesterday! I took a boat and went over, and everywhere, all around, wild cucumbers; oh, so pretty, and my bees all over them."

Old Baptist's eyes shone and he gesticulated with the energy of youth despite his seventy years, as he talked in his broken English. Then he pointed to a hive that had more supers on it than any other of the three hundred in the bee garden. Scrawled across the top was a sentence in German.

"Know what that say?" asked Baptist. "It say there, 'Goot work. I dank you.' When my bees they do goot, I tell them."

Baptist Beck's apiary promises to produce 6,000 pounds of honey this year, and has yielded its owner good money for twenty years, largely, as he believes, because nature fashioned a little paradise for bees where his apiary now is, and when he drove his homestake on the spot he saw nature's plan and fell in with it. The only "improving" Baptist has done is to make the place a little more wild by adding to the natural profusion of plant life as much more of a tangle of flowers and vines as he could make the soil produce.

It is in the Mississippi hills, up Miner's Creek, just south of Guttenberg, Iowa, that Baptist lives and grows honey. There is no main road leading that way, no other house on that side of the valley. The rambler over the hills finds a foot path in the woods and following it comes upon the gate to the bee paradise. Just inside, a great spring pours from a dark hillside into a big wooden vat arbored over with a venerable grapevine. A step or two from the spring is the home, an old stone house built way back in the days when they dug for lead in the hills round about and dreamed of rich mineral treasure that never came true. More grapevines climb over the house and make a wide natural back and side porch. At the front of the house is a sight to charm nature-lover, artist, poet, beekeeper or what not. Hills two hundred and three hundred feet high tower in a horseshoe about a wonderful little pocket of a garden. Through the opening in the hills to the east is a vista of bottomland, Mississippi and island. The hills are covered with the wild beauty of tree, brush and vine characteristic of the Iowa bluffs. The bottom land is a lush mass of lowland plants. The island is out just a bit in the channel and there is white clover, locust, wild grapevine and the wild cucumber. Basswood is abundant on the hills and white clover on the bottom lands.

The late August morning I saw Baptist's garden; it was ablaze with the yellow of sunflowers and goldenrod, splashed with great red splotches of princess feather. In the center a fountain of water from the spring ran into a cement pool. The beehives stretched in a semi-circle around the edge of the garden, back up against a high bordering of wild grapevines. In among the flowers were corn, tomatoes, cucumbers and canteloupes for Baptist's wife grows garden stuff for market, while he raises honey.

The hills, bottoms and island are as much Baptist's property as though he owned them, for nobody ever disturbs their natural growth of trees and plants. So, in the spring, "Monarch of all he surveys, his right none to dispute," he goes out with a sack of white clover seed and scatters it over the bottoms and out on the island, making a great bee pasture all around his little garden. The hills, island and lowlands give the greatest imaginable profusion of honey plants throughout the spring, summer and fall, though Baptist regards the island as his particular treasure trove, next, of course, to the basswoods on the hills.

The nearness of the island to the mainland makes it a safe pasture. This is in contrast to the experience of other beekeepers in the valley somewhat north of the one in which the Beck apiary is located. Here the islands are quite a distance from the

Baptist Beck's apiary, with grape vines over the house.

shore. The bees seek them for the cucumber and locust just as they do for Baptist, but the distances are so great that the bees returning with their loads often do not reach the shore in safety. Mrs. J. Clark, a beekeeper in a valley twenty miles north of Guttenberg, has removed her apiary several miles back from the river to prevent her bees from going to the islands. It is her theory that as they return homeward, the bees, because of the load they carry, fly close to the river's surface. Becoming weary in the long flight they see their reflection in the water and, thinking it is land, drop down.

Baptist tells this about his fountain: Soon after he had built it he began to notice dead bees in the water. He was puzzled to determine what attracted the bees until he made the discovery that they came seeking the moss that had formed in the fountain. "I think they liked a kind of salty taste it had," he says. The moss was removed and has been kept out since, and no more loss of bees has occurred in this way.

Iowa.

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## A New Way to Hive a Swarm

By F. Dundas Todd.

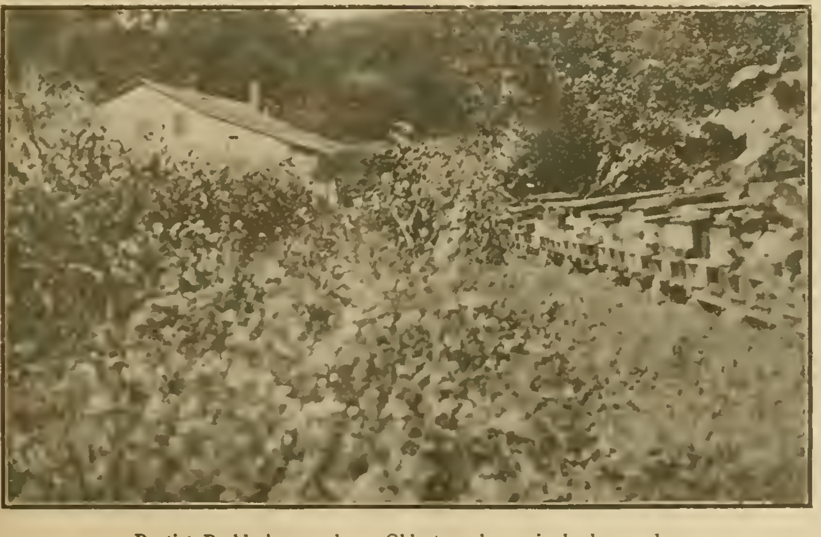
A NEW fact in bee behavior, or a supposed new fact, is always interesting to me, so I store it away in my memory, convinced that some day another new one will come my way, one that will combine with the older one, and the consequential result will be another new idea applicable to practical beekeeping. Here is my latest experience:

In 1911 I had the pleasure of spending a couple of days with that veteran beekeeper, Jacob Alpaugh, now playing with bees in Florida, and he drew my attention to the fact that seemed to him to prove that bees could hear. We were watching a swarm entering its new home, which was situated alongside of a very dense mass of tall trees, the front of the hive being at angles to the line of the clump of vegetation. Hundreds of bees were soon flying along the face of the mass of grass as if looking for something, and Mr. Alpaugh asked my judgment as to their purpose. I had no opinion to offer, so he told me that from his point of view they were attracted by the echo of the noise made by the fanning bees at the entrance of the hive, and that therefore bees must be able to hear.

This past season I was lucky enough to have a visit at my own apiary from his brother, Ephraim Alpaugh, and naturally I told him of my experience with Jacob. On recounting the swarming incident and mentioning Jacob's deductions as to hearing ability of bees, he assured me he had better proof, which he utilized for many years in a very practical way in swarming time. When a swarm clusters he never troubles to gather it in, but he puts the new hive as near to the swarm as possible, picks a handful of bees from the bottom of the cluster, throws it on the alighting board close to the entrance, then proceeds about his regular work. As soon as the bees start fanning at the doorway, the cluster begins to break up and in less than a quarter of an hour all the bees in the swarm will have joined those at the hive. In his judgment the bees of the cluster hear the cheerful call "Home is found," and at once join their sisters. I must confess I was rather incredulous, but a friend who was with Mr. Alpaugh assured me he had seen the act done a score of times without a single failure. Naturally I wanted to know just how far bees travel in such circumstances, and Mr. Alpaugh said that on one occasion the swarm had clustered on a fence rail and post, so out of curiosity he placed the hive on the ground 12 feet from the swarm. On this occasion the bees did not fly but crawled down the post and marched like an army along the ground to the hive. It was about the most interesting sight he had seen in his beekeeping career.

His news was too good to be kept, for, if true, it solved very simply many awkward swarming problems. I have vivid recollections of a lady dramatically reciting her troubles with a swarm that landed on a stump which was covered with a big growth of wild blackberries whose prickly stems forbade all attempts to handle the bees. Seven different swarms had landed in the same place, and she lost them all. She denounced her book of instructions (I was the unfortunate author), which told her how to handle a swarm that clustered on the branch of a tree, but her swarms never went on trees, they always preferred inaccessible stumps. I grinned for a quarter of an hour, and the more I chuckled, the warmer she got. It was one of the most delightful episodes of my life, so picturesque and so free was her flow of rhetoric. Well, I passed the good news along, and then one of my young beekeepers said, "I want to make a confession to you, I have been practicing this system for three years, but with a rather silly addition, so I have always been afraid to tell you about it." It seems he was one day about to gather in a swarm that had clustered on a bunch of grass when an elderly woman who was passing said, "Let me show you how we handled that kind of swarm back in Ontario." She set the front of the hive on the edge of the cluster, laid a few grasses with adhering bees at the entrance, then proceeded to bang the rear of the hive with a stick. To my friend's surprise the bees left the grass and entered the hive. The lady claimed the noise attracted the bees of the cluster to those on the alighting board. He had practiced the method many times without a failure, but hated to own up that he had in any way made a noise, feeling I would ridicule the idea.

Next in order was a day spent with Mr. F. W. L. Sladen, Dominion apiarist. Such a day is always a red letter one, for I advance all my latest notions and chuckle with glee as he runs his little scalping knife through them, sweeps aside all the non-essentials, and gets at the meat in the kernel. I set forth all I have said above, then awaited the outcome. "No proof that bees can hear, just confirmation that they can smell. Over twenty years ago I pointed out that there are many scent glands in a bee's abdomen, and that when bees fan their wings they scatter the scent for many yards around them to attract others. The scent will easily travel a dozen feet. Furthermore, I believe that when bees are clustered in an inaccessible position, such as the limb of a tree, the beekeeper need not get bees from the cluster; those from any hive will do just as well. Just take a frame of bees and shake them in front of the new hive; the old ones will fly home, the young ones will take possession and fan for help. The scent will reach the cluster, and its members will join those on the entrance board. Some day when you see bees fanning, just put your nose close and you will smell the scent, which has an odor like iodine."



Baptist Beck's bee garden. Old stone house in background

All of the above came to me after the swarming season was over, so I have had no chance to try the idea, but the practical application to hiving a swarm is vouched for by four gentlemen in whom I have every confidence, so I hasten to pass along the good news. If the method works as efficiently as it is said to do, the beekeeping world has learned something worth while.

Victoria, B. C.

## Beekeeping in Costa Rica

By W. B. Gehrels

(Continued from January)

AFTER fitting out a temporary home in San Jose, I began to look around for bees and the best location for an apiary.. After a futile hunt for bees for over a month that took me over the largest part of the country, I finally gave it up and moved my family to Puntarenas on the west coast, as I had decided that this part offered the best prospects for beekeeping, shipping my bees here, also.

Then I was called to Panama on other business, returning to Puntarenas in October. The bees were then ready to swarm, with the hives full of the best-flavored white honey. The next thing necessary was some empty hives and new supplies. There was very little in this line in Costa Rica, and to order supplies from the States for immediate use was out of the question, as freight rates, duty, etc., were almost prohibitive, and shipping was in such a condition that you were considered lucky to get your goods within six months after placing the order. And then, what amount of supplies would I need for the increase from six colonies? Everything looked promising to us, but everything was new, and you cannot judge correctly without some previous experience.

I went into the country and bought 15 fine logs of suitable timber for lumber, took them to the nearest sawmill, and had them sawed and planed in boards seven-eighths inch thick and from 10 to 16 inches wide. Then I put up a saw table and gasoline engine at home and made by own bee hives. The natives called it a "honey factory." We used pochote timber for lumber, which is a variety of Costa Rica cedar. This is a red, fine-grained, soft wood, very easy to work, which shrinks and warps very little, is proof against the attack of wood ants, and very durable. It can be bought in the log up to 48 inches in diameter.

By the last of March we had increased the six colonies to 75, and also secured over 3,000 pounds of honey, notwithstanding we had a great deal of trouble in getting the queens mated and laying. From 60 to 75 per cent of the young queens would disappear about the time of their wedding flight. This trouble we attributed to our location. Puntarenas is on a narrow peninsula about 5 miles long and from 150 to 300 yards wide, and water on both sides. Under this condition the queens had a good chance of dropping into salt water in taking flight.

We ordered a honey extractor from the States in November, which arrived at the end of March following, almost in time to take off our crop of honey. I had just finished extracting with a small extractor that I had borrowed in San Jose. The manufacturer of whom I had ordered my machine stated that the delay was not his fault, and that we were lucky in being able to get shipping space at all.

At any rate, we had increased from 6 to 75 colonies, and secured 3,400 pounds of honey in about 5 months' time, over half of the honey being as good in quality and flavor as white clover or Texas catsclaw, almost water white, and very thick. Honey does not candy at Puntarenas.

About this time the rainy season set in and the honey flow decreased. The rainy season lasts from April to November, and is called winter here. During this time it rains almost every day. The dry season lasts from November till April; this is called summer. During this entire period there often is not a single shower. This dry period is the time of heavy honey flow, everything blooms abundantly and this gives an ideal extracting and working season. This condition prevails on the west coast, or the western slope of the mountain only.

Nothing seems to disturb the flow of nectar, except possibly an occasional day when we have north wind. This produces a very dry, hot atmosphere, which reduces the honey flow some. The tides also seem to affect the secretion of nectar, possibly not the tides themselves, but the same force that produces the tides. The strongest honey flow lasts about 3 hours during each day, and this time seems to vary with the time of the high tides. This may seem superstitious to some.

There are no end of flowers in bloom the year around, but the heaviest bloom period is during the dry season. I will take up the honey-producing plants of Costa Rica in a future article.

In view of the large number of young queens that we were losing, our next step was to move our bees a few miles inland, where the queens would have enough land space to take their flight. Consequently we purchased two lots in a small village about 3 miles inland, across the bay, at the edge of the mangrove. Here the bees had access to many varieties of honey-producing flowers.

Our local honey market is fairly good, but we shipped our honey in bulk to Liverpool, England, from which source we had the best prices offered.

The new site that we bought for an apiary is about 2 miles from Puntarenas, across the bay, on the main land, and can be easily reached by boat. The place had cocoanut palms, mango, guava and some kojol palm trees, and was covered with weeds, vines and brush and infested with ants, rodents, toads, crabs and iguanas. We cleaned, burned, poisoned and used the shotgun until, at this writing, 12 months later, the place is transformed into a presentable apiary and orchard.

We moved our bees by loading them on a dugout or bongo, which is a boat cut out of a tree by the natives. For power we used the current of the rising tide. Returning with the empty boat on the falling tide, the current is very strong here owing to the great rise and fall of tides.

At this location the bees have mangrove on one side, and forests fields and pastures on the other side.

We placed the bees on benches two feet from the ground, facing each colony in alternate directions, this to save room on the benches, as we can thus place them very close together, and still minimize the danger of losing young queens, which often happens when the colonies all face the same direction, and are close together. We also made our hive bottoms very short, projecting an inch and less for alighting space, in order to have less room for toads and iguanas to hold on while they eat bees.

For shade during the summer or dry

A Costa Rica apiary under papaya trees one year old from seed.

Texas beekeepers go to school

season we planted rows of papayas between the rows of bee hives, and they now more than serve their purpose, as most of the trees are loaded down with fruit, and the fruit is delicious and can be eaten straight, or with cream, made into candy, or preserved. The blossom also yields honey, but the bees only seem to work on the trees that produce the male flowers, these trees have smaller flowers and produce no fruit. Early in the morning and late in the afternoon the bees fairly swarm over these flowers, humming birds, millers, butterflies and native bees also visit them.

Large trees and too many plants are undesirable in an apiary here because too much shade attracts ants, cockroaches and other insects, as well as it gives a harboring place for birds and iguanas. I believe the best thing for shade is a single shade board, or a mat made out of stitched palm leaf and one placed on each colony during the summer season. During the wet season no extra shade is needed.

(To be continued.)

## Texas

By E. G. Le Stourgeon

THOSE beekeeping communities that have not had the advantages of one of the Short Course Schools under the direction of Dr. E. F. Phillips and his corps of assistants can have little conception of their great value. I will admit now that the Texas beekeepers accepted the idea of having one held at San Antonio more in the spirit that "it was the thing to do," like a woman wearing a hobble skirt, rather than from a realization of its need and its great value.

We gathered from far and near in great numbers (over 128 out-of-town bee-men registered for the school), and waited rather curiously for the show to begin. One Nueces Valley beekeeper said: "I am going to attend the opening session. If it is not worth while I can quietly drop out and go home." He staid until the last word was spoken. A Laredo beekeeper said: "I have to go home Thursday night. I will only attend the first four days." He remained over Saturday. He could rather lose his business engagement at home than miss a single lecture. A Jourdanton beekeeper intended to attend only one-half the sessions, because of other business, but could not do so. He said: "The program fits together like the corners of a dovetailed hive. I simply had to attend every session or lose my object in coming at all."

These are only typical instances. They could be multiplied many fold. The programs for the school are carefully worked out and are carefully carried forward as a constantly developing theme. Mr. Demuth, in his expositions of beekeeping practice during the succeeding seasons, follows very closely the lines laid down by Dr. Phillips in his discussions of bee behavior.

Mr. Sturtevant gives a careful survey of every phase of bee disease and makes plain to the lay mind the symptoms and effects of known bacteria. A Waxahachie man who had long served as Inspector in his county, arose in open meeting and said that the one lecture on differential diagnosis was alone worth more than the cost of the trip to San Antonio and the week lost from his business He merely expressed the thought that formed in the mind of every beekeeper present.

The school afforded the honey producers of Texas an opportunity to become acquainted with our new State Entomologist, Dr. M. C. Tanquary. His lecture on the life history of the bee proved to be one of the best numbers on the program. One evening he also gave an illustrated lecture depicting his life in the Arctic while zoologist with the Crockerland expedition.

Mr. H. B. Parks, our State Apiculturist, who has in his charge the newly-established Texas experimental apiaries, was "Principal" of the school and presided during its sessions. One of the most enjoyable entertainment features of the week was his illustrated lecture on the Aleutian Indians. While in the Indian school service of the Department of the Interior, Mr. Parks heard much of the folk lore of these interesting people, which he gave us in a connected and interesting manner.

Our responsibility, as commercial honey producers to the beginner in beekeeping, was discussed by Mr. Kennith Hawkins, specialist in beekeeping for the G. B. Lewis Company. Mr. Hawkins pointed out the need for intelligent propaganda and the responsibilities that rest on us toward those who are still in ignorance of modern methods of apiculture. His close acquaintance with southern beekeeping gave his remarks peculiar emphasis and increased their practical application and value.

The climax of the session came Friday night, December 19, when the entire school of beekeepers "clustered" for a typical Mexican dinner. Dr. Phillips had told us to expect clustering at about 57 degrees F., and that the temperature of these clusters would then rise. Thanks to the pungency of some of the viands served for dinner, the prediction was certainly verified. Many pleasant memories were carried away by all who participated in the unique and inimitable event.

San Antonio, Texas.

## Fertilizing Drone Eggs

I find the article by Gilbert Barratt on fertilizing drone eggs particularly interesting, because it appears to disprove that which Dr. Phillips has so consistently maintained both in his book, "Beekeeping," and also in his California lectures, namely, that the sex is determined before fertilization.

I quote from his book, page 188: "It seems clear, however, that the statement of Dzierzon that all the eggs in the ovary are male eggs cannot be accepted, and it is, in fact, not improbable that the eggs destined to be females die for want of fertilization, while the eggs destined to be males, not requiring fertilization, are capable of development."

Now, if that were so, fertilizing a drone egg artificially would not make a female of it. So if Gilbert Barratt's experiments are correct, as I have no doubt they are, then Dr. Phillips will have to modify his theory.

Dr. Phillips attached a good deal of importance to the fact that bees did away with the eggs of a drone layer. To me this does not seem so very important, as I know bees will remove eggs of a normal fertile queen if they cannot look after them.

The bees can probably tell whether an egg is fertile or not. And in the case of a drone larva they probably get disgusted at seeing nothing but drone eggs, especially if they are in worker cells, and consequently eat them up sooner than raise useless stunted drones.

WILL H. GRAY.

British Columbia.

## Attendant Bees for Shipping Queens

Some time ago a question was raised as to the age of bees which is best for caging for shipment with queens. The question was presented to several queen breeders and some of the answers are as follows:

I believe it advisable to mix the bees in shipping queens. That is, put in about half young bees just emerged from the cells and half older bees having their honey-sacks well filled with honey. I adopted this plan early in my career as a shipper of queens, and have found it very successful. To go into details as to the way I pack queens for shipment, in using the ordinary 6-hole cage I first run in the queen, then run in nine young bees—those whitish looking bees that have only been out of the cells a few hours—then run in ten of the older bees that have their honey-sacks well filled. I used to have quite a trade in queens to Europe before the great war came along and broke it up, and before the great drought in southwest Texas broke me up, and I used the large export cage for that trade. In preparing that for mailing I put in 19 young bees and 20 large bees. I was almost universally successful in shipping queens, the few losses I had probably being caused by fumigation of the mails at some place en route. I have had them on the road for as much as 18 days and arrive in good condition, only a few of the bees being dead. I consider it very important that the older bees selected as escort for the queen should have their honey sacks well filled This makes them peaceable, so that they are not inclined to ball the queen in the cage.

Texas. H. D. MURRY.

Replying to yours of late date regarding attendant bees selected to accompany queens in transit, I beg to say that for short distances I take the first I can get, usually those with heads in cells, as this makes it short work to pick them up by the wings. I avoid all bees with abdomen padded out as though full of food.

For long distances I am more careful. Pass your hand a few inches above the surface of the comb and the bees that look up at the hand and hold their wings up make the best shippers, according to my experience. These you will find have empty stomachs. In shipping to Cuba many years ago (in my infancy) I decided that the bees should start well fed. I placed the cages on a paper well smeared with honey and let them take their fill. Every queen and bees arrived dead.

JOHN M. DAVIS.

Tennessee.

L. E. Miles, Balboa, Canal Zone, writes to J. M. Davis:

"I received the six queens by yesterday's boat, 5 living, one dead. The five were in the best condition and one cage had a comb started in it and the queen had filled the six cells full of eggs. It may be common, but it was a surprise to me."

## Bumblebees and Smoke

With reference to the article on the bumblebee by H. B. Parks which appeared in our December issue, F. W. L. Sladen writes to confirm Mr. Parks' experience that these insects cannot be readily subdued by smoke. Mr. Sladen says that in his experience they cannot be subdued by smoke and that either cyanide or ether is necessary. Mr. Pellett, in a foot note to the Parks article stated that he had been able to subdue them readily with smoke. In this case the weather was warm and conditions were quite normal with the colony. It is possible that some other factor entered into the case which was not noted, and the smoke credited for a condition for which it was not responsible. Further experiment on this point is worth while in order to definitely settle the question, and it is hoped that all three of the above named men will try again next summer. We will welcome the experience of others who have given the matter a trial.

## A Beekeeping Survey

In order to secure information on which to base plans for future work in beekeeping at the Iowa State College of Agriculture, Professor Paddock is undertaking a survey of the beekeeping of the State. Letters have been sent out to a large number of representative beekeepers asking information regarding the extent of their operations and the general nature of their methods. It is to be hoped that all beekeepers receiving this letter will reply promptly and fully so that the college may have full information regarding Iowa beekeeping.

# BEEKEEPERS BY THE WAY

### A Beeman From Nebraska

H. C. Cook, of Omaha, is a retired policeman, but retirement from the police force with him did not mean inactivity. Cook is a beekeeper, and since his bees provide for him more generously than the city did during his long service as a policeman, it is evident that he keeps busy most of the time with the bees. His apiary is one of the show places of Omaha and hundreds of visitors call to see something of the honey-gathering industry. With about a hundred colonies on a city lot he furnishes a splendid example of intensive beekeeping. His annual returns from the bees run from $1,200 to $2,400 per year. When the writer first heard about Cook through a writer for the agricultural press, he was greatly disposed to doubt the stories as told. A later visit was sufficient to bring conviction that Cook is getting the honey and turning it into cash equal to the sum claimed by the enthusiastic reporter. His lowest per colony average has been 78 pounds, while he has harvested as much as 147 pounds per colony.

H. C. Cook, of Omaha.

An important secret of his success lies in the fact that he sells his honey at the top price. He sold granulated extracted honey at 60 cents when liquid honey sold at 50 cents per package. When consumers complain that they can buy cheaper honey, Cook always admits the fact, but says that he is not competing with that kind of honey. He sells all he can produce readily at 40 cents per pound for extracted honey and $8 per case for comb.

Cook is inclined to try experiments and to get all the fun possible out of the job while making a living from the bees. One sees a lot of things in his apiary that he never saw anywhere else. One of these ideas is a plate glass inner cover for every beehive. This is worth while, too, in a city like Omaha, for every visitor can be given a glimpse of bee activity without opening the hives. His "silo" for storing combs was described in a recent issue.

In a big city the directory usually contains rather a long line of "Cooks," and Omaha is no exception. When he discovered that his customers had difficulty in remembering his particular initials, he asked the telephone company to change his name, but not his initials. It now appears as "Honey C. Cook," and there is no further trouble because of his customers getting the wrong Cook.

# DR. MILLER'S ANSWERS

## Prevent Swarming

I was just reading an article by E. R. Root, "Swarming via Clipped Queens." He states that when the swarm is put in a new hive on the old location (or stand), to move the old hive to a new location, cutting out all queen cells but one. But what I want to know is, could I not set the old hive close up beside the swarm, both facing the same way, and on the seventh or eighth day move it to a new location ten feet or more away? (The same as Doctor Miller advocates so much). Would that not work better than bothering with the queen cells. In cutting out the queen cells, one would always be in danger of missing one or more, besides the extra manipulation. MICHIGAN.

Answer.—Either way will work. Much of the success depends upon the taste, the management of the beekeeper, the strength of the colony, the warmth of the season, etc. You need to use discretion to decide which is best under the circumstances.

## Bees on Shares

If one started in the bee business without any capital, what share is customary for him, if he does all the work and everything furnished? OREGON.

Answer.—Once only, I undertook to manage bees that belonged to another party, furnishing labor only. The agreement was that the proceeds would be divided half and half, each party furnishing hives for his share of the swarms. It does not seem to me that this can be improved upon.

## Shipping Bees

Can bees be sent safely from Texas to the State of Washington? I am thinking of buying packages of bees in the Southern States. WASHINGTON.

Answer.—We have often received queens from Europe in good shape. As to bees by the pound, many lots have been shipped from the South to Canada safely. There is no doubt that they may be transported, if properly packed and sufficiently fed, from Texas to Washington.

## Gathering Pollen

What time of the season do queenless colonies gather an over supply of pollen, as stated in the December Journal? In my experience, when a colony becomes queenless during the winter or early spring, they are inactive and gather very little pollen.

Answer.—During the winter and early spring there is little or no pollen to gather. But when there are plenty of blossoms, if the colony is still strong in bees, it gathers a great deal of pollen, though much less than a queenright colony. As this pollen cannot be consumed, its quantity is in excess of that of a queenright colony.

## Size of Frame in Modified Dadant Hive—Wintering—Vetch

1. Is the frame used in the modified Dadant hive of the same dimensions as the Jumbo, except being spaced differently?

2. In wintering bees in the Demuth cases, is it necessary to keep the entrance clear, or will it be all right to let snow drift over them?

3. Do any of the vetches which are grown for hay produce honey? MINNESOTA.

Answers.—1. Yes.

2. Snow is not injurious unless it thaws and freezes so as to make a coat impervious to air, stopping ventilation. It should be removed when there is chance for flight.

3. According to Bonnier, who shows cuts of 27 different kinds of vetch (*Vicia*), in his "Complete Flora of France, Belgium and Switzerland," 188 different kinds of vetch have been described in different countries. He writes:

"Many of them are visited by bees, which often gather in them an abundant nectar."

It is unimportant, as far as we know. The *Vicia sativa* is cultivated, according to both Gray and Bonnier.

## Increase—Wintering

1. I have two swarms of bees purchased last fall. I introduced an Italian queen to one swarm in September, and the other, which was purchased later, has a black queen. I would like to get as large a crop of honey as possible, and at the same time increase to six or eight swarms. Will you please tell me the plan you consider best to do this? I plan on requeening my black bees early in the spring and keeping a drone trap on the hive to keep my bees pure Italian. I have the only bees for 4 miles around, and think conditions favorable for me to do this, if I use the proper care myself.

2. I have my bees in the cellar, where the temperature stays between 38 and 42, but is at 40 most of the time. One swarm is a little weak. Would you recommend putting in a division-board at this time, or would they be better left alone?

3. To keep my wife from being nervous about going into the cellar, I built a shelf out 8 inches on the front of each hive and screwed the whole front in and covered the whole thing with a burlap sack, as my cellar is too light. Will this do any damage if I clean this shelf off once or twice during the winter?

4. One colony is a little short of stores, although it has a plenty for the winter. I planned on making a plate of hard candy and putting over the frames just before taking out of the cellar in the spring. Do you think it would be better to take a frame of honey from the other hive, which has a large supply of stores, and giving to the weaker? I am forced to do my bee work before 9 a. m. or after 5 p. m., so it is necessary that I do my swarming artificially, and do not allow any natural swarms to come out. MINNESOTA.

Answer.—1. Don't keep a drone trap on your hive, even if you run the risk of mismatings. A drone trap is a hindrance to success. When you Italianize your colony, remove all the drone brood. That is much better than keeping a drone trap.

2. Don't disturb the bees that are in the cellar, unless they are in danger of starvation. In that case just put a cake of feeding candy right over the brood combs.

3. The burlap sack is all right if the temperature is not so low or so high as to make your bees restless. About 45 degrees is right. Do not disturb them by cleaning a shelf so as to jar them.

4. Hard candy or honey will do for feed. But in spring honey is a little better, if the other colony has it to spare. Do not attend to this till they are on the summer stand, unless they are entirely short.

## Keeping a Record of Queens

We are taught by the colleges and through apicultural books that we should keep a careful record of each colony of bees in the apiary as to fecundity of the queen and honey production by the daughters of each queen.

In attempting to do this I find considerable difficulty and have frequently wondered if the large commercial beekeepers in my country and yours do really keep such records.

To better illustrate what I mean, take the following actual example: I have a record book with ruled columns as follows:

Date, Spring, Clipped, Brood Queen. Honey, Fall, Meanings, Spring condition, Frames Brood at opening of season, Origin of queen (from whom bought), Honey Production, etc.

Now take colony No. 45, appearing in above record; originally a package from the South in early May of 1919. Record shows that on June 5 building up nicely, gave frame of brood from No. 6; June 26 brood mostly hatched, queen O. K., but few recent eggs and three queen-cells, queen evidently failing. Cut out two cells and left colony to take care of itself; later found colony queenless and gave queen-cell from No. 24, which queen came through queen cell from No. 3, which came from queen cell No. 5. Now how is it possible to follow the record of this queen family as to previous honey production and purity of origin? Or what advanntage is there in doing so? I see clearly enough that one doesn't want to breed from poor stock, and that the motto "the best is none too good" applies with much force to beekeeping, and with particular force to commercial honey production, where quantity of crop made in a few short weeks of summer makes (or mars) the whole season's business, and it is equally clear that the crop is dependent upon the productiveness of the queen (again provided the weather is favorable for secretion of nectar).

I confess that I get puzzled in that theory of "breed only from your best queen"—not theoretically, but practically, as I find it is so hard to follow up, one season not giving the necessary record of what a queen will do and the following season may be like the year just closed, a general failure in my district, and after two seasons, the queen has passed her age of usefulness.

I have been turning over in my head a remark made to me in Eaton's store in Toronto a few weeks ago, when I happened to run into one of our best-known and most successful beekeepers, a man who has been in the business for many years. In discussing some of the problems I had been trying to solve, this man said to me: "Did you ever notice that the most (and I was going to say the only) successful men in commercial honey production, the men who are making their living by beekeeping, have been at the business around a period of twenty years?. Take any of our best men, say Byers, Pettit, Holterman, they have all been at it for a long time—they are able to size up the probabilities of the season at an early date and make their shifts accordingly, where a man new to beekeeping hasn't learned what his trouble is until it's too late to rectify it that season; consequently the season has passed before he really wakes up. That's the trouble with all beginners. I tell you, it take about twenty years to make a successful beekeeper." ONTARIO.

Answer.—There is no doubt that, in beekeeping as in every pursuit, long experience makes for success. So the remarks of your friend in Toronto are very appropriate and show that *he has* experience.

As to keeping record of good queens, I do not find it difficult. In any one season, select the colonies that have given you the best crop, and breed from those. Then keep a record of queens bred from these and select among those queens the one or two that have given pure, gentle bees and excellent honey producers. Do the same for drones.

There are bad seasons, it is true. But when you have made a selection you should have no trouble in following your good queens from year to year. A good queen, with a record, should not be discarded because of a bad season.

The best and most satisfactory queen breeders are those who select 3 or 4 excellent queens and breed from them almost exclusively. But it takes persistence, attention and carefulness of all the details.

## Wintering

1. I have some bees; they were doing fine until winter. I don't understand how to keep them. I put them in the cellar; they won't stay in the hive. I put screens on the doors, and still they fly against the screen and try to get out. The cellar is dark and still. I took them outside and put about 4 inches of rye straw around them. On soft days they come out and fall in the snow and freeze. I put screens on the entrance of the hives. If I keep them in the cellar or upstairs what temperature should the rooms be?

2. Next year I intend to build a bee house Do you think a building with about 8 inches of sawdust between the walls would be warm enough for winter without any other protection?

3. Please tell me where is the best place to winter bees. If outside, what is the best cover and how much should be around the hive? NORTH MICHIGAN.

Answers. 1. It is probable that your cellar was too warm at the time when you placed the bees in it. It is out of the question to expect to keep bees in a cellar by putting screens on the doors. If the cellar's temperature is between 45 and 50 degrees, the bees will be quiet without any screens, either on the doors or on the hive entrances. Outside, it is impossible to keep the temperature where the bees never want to fly. But in warm days it will do no damage if a few of them get lost.

2. The building that you propose to make would be all right for your bees if they can fly out whenever it is warm. Otherwise a cellar is better, in your latitude.

3. Winter in a good cellar, in your latitude. If you winter out of doors, better make outer cases with about 6 inches of shavings or similar protection around, under and above your brood nests.

## Moth—Bees by the Pound—Transfer

1. I have Dr. C. C. Miller's two books ("Fifty Years Among the Bees" and "Thousand Answers) and like them both real well. I had considerable trouble with the bee moths this year. They killed out three old colonies for me and a new swarm that I caught. I have read that zero weather kills the moth, so I have left my bees out of doors so far this winter and the temperature has been down to 16 degrees or more below zero. I will put them in now. Dr. Miller's book says the Italian bees keep the moths down, even though the colony be quite small. So that seems to be another thing for me to take advantage of. Do you think I have done the right thing by leaving my bees out to get that zero temperature to kill the moths? I suppose I will get some goo from it, but suffer the loss of a few bees to pay for it. Am I right?

2. I have a hive that I bought from a neighbor last spring that didn't have good attention, consequently the lid was practically no account and the bees froze out. There is quite a lot of honey in the bottom, so I was thinking, it being dark and in good combs, it would be fine for bees to use anyway, either to feed the bees in other hives, if they need some, or to start new colonies in the spring. I shouldn't think new colonies would need very much honey at that time of year. So how would it be for me to buy some pound packages of bees and give each nucleus a frame or two of this honey?

3. When I buy bees by the pound will there be a queen come with each package, or do they only sell workers without queen? Please advise me as best you can about it. There are lots of bees in the timber here and also there are several colonies kept around over the country. So possibly I can't keep the Italians pure even if I should get a start of them. I am quite new at the bee business and don't know whether I can make a good job of finding old queens and replacing them with Italians or not.

4. I would like to get a good start of Italians and try raising some queens for my other hives. Possibly that would be better than to try to stock all the hives in the spring.

5. Another thing I would like to do is get some of my swarms into new hives. NEBRASKA.

Answers.—1. No, you did not do the right thing to leave your bees out to kill the moths. If there are any moths in them, they stay in the warm part of the hive and do not die till the bees do. Putting your hives in the cellar late in the winter is not good, because the bees are already loaded with feces in their bowels and may suffer from diarrhea.

2. Yes, if you have honey from a dead colony and preserve it you may use both the honey and combs for bees by the pound, bought in the spring.

3. When you buy bees by the pound you had best buy a queen with each lot. They arrive in better condition and really need a queen. But you can buy bees without queens.

4. Yes. Try your hand at it next summer. Why should you not succeed as well as others have done?

5. To transfer your bees into new hives, wait till the bees swarm, then hive the swarm in an up-to-date hive; set it on the old stand, then set the old hive close beside or behind it. In 3 weeks the brood will all be hatched out of it and you can shake all the bees in front of the swarm. Then the combs may be used as you see fit. If they do not swarm, take off the cover, place the new hive on top of the old one and drive the bees into it, making sure that the queen is up with them. Then place a queen excluder between the two until all the brood is hatched, when you can remove the old hive.

## Swarming—Extracted vs. Comb

There are so many ways and so much talk about keeping bees from swarming that a beginner is confused and don't know what, how or when. Some claim one thin and some another.

1. I want to know how it will work to use the full-size brood frames to extract from, and then I could use all bodies the same size.

2. It is all right to extract the outside frames of the brood nest and put those empty ones above and foundation below. Would they go above more readily to work and check swarming?

3. They say that the prime swarm rarely sends forth another swarm; but it is almost a sure thing with mine; as soon as they get good and strong they will swarm. I put out 23 swarms and got about 1,800 pounds of comb honey. I am thinking of changing to extracted and see if I cannot get along better. WISCONSIN.

Answers.—1. Yes, it will do to use the brood size frames in the super.

2. Unless you have hives containing more than 10 Langstroth frames in a story, you will have but little to extract from the sides of the brood nest. Give plenty of room, plenty of ventilation and plenty of shade and you will diminish the swarming tendency.

3. You will have less swarming with the production of extracted honey, all other things being equal. You must have a very good location for bees.

## Queen-Cells

1. Please tell me how you can tell the difference between a ripe queen cell and a fresh one.

2. Can a queen cell be cut out of a brood frame and put in some other comb?

3. Will the bees accept such cells by shaking some bees on said comb by imprisoning the bees for 24 hours or so? WISCONSIN.

Answers.—1. A freshly sealed queen cell looks smooth. A ripe queen cell looks a little rough on the end, as the bees were anxious to see what is in it and meant to open it.

2. Yes, certainly. You must use a great deal of caution and cut around it far enough not to damage it. Use the same caution in inserting it. Nowadays queen cells are prepared artificially, so that they rarely need to be cut out of the comb.

3. Yes; but it would be better to put the cell on a comb of brood, in the most central part of it. Then put in bees enough to take good care of it. Be sure and have honey there, also.

## Wintering

1. Will a strong, populous colony winter successfully in a 10-frame Danzenbaker brood chamber? The frames are 7½ inches deep. I have tar paper around the outside of the hive and they are kept in a fairly comfortable building.

2. I left a super of section honey over the brood chamber. Do you think this is necessary, and will it cause a loss of too much heat?

3. Should the super be taken off before the bees are set out in the spring? IOWA.

Answers.—1. Bees can be wintered successfully in almost any style of hive if they have enough stores. The Danzenbaker hive is very shallow, and that is against it, but with an upper story full of honey it is quite probable that they will have honey enough.

2. The super may cause loss of heat, but it is probably necessary for a honey supply.

3. Do not remove it unless the colony is weak and does not need the honey stored in it.

## Beginning in City

1. How many hives should an inexperienced hand start with?

2. What time of the year should you start?

3. Can bees be raised in the city? OHIO.

Answers.—1. If you have no knowledge of bees whatever, say 2 to 6 colonies, till you learn whether you can handle them.

2. The best time to get bees is in spring, during fruit bloom. Be sure the colonies have good queens and sufficient stores to carry them to the honey crop.

3. Yes. Chas. F. Muth kept an apiary in the heart of the city of Cincinnati and made some honey. Thos. G. Newman kept a number of colonies in Chicago. However, it is better to live in the outskirts of the city, if you wish to keep bees successfully.

## Raising Queens—Foulbrood

1. Can bees be kept near chickens?

2. Explain how to go about raising queens.

3. What is meant by foulbrood? PENNSYLVANIA.

Answers.—1. Bees may be kept in the same yard with chickens. But if the yard is very small it might be best to place the hives on a stand so that chickens will not annoy them or be annoyed by them.

2. It would take an entire number of the Journal to explain about queen-rearing. Send for "Practical Queen Rearing," or for "First Lessons in Beekeeping," and you will read the explanation of it.

3. Foulbrood is a contagious disease of the brood of bees. There are 2 varieties of it, called "European" and "American" foulbrood. You will also read about this in books on beekeeping.

## Clover—Shipping Bees

1. How is the best way to get a start of white clover? The place where I intend to sow the clover is a large garden that was full of weeds. Is this a good place for the seed? I am a boy 16 years of age, and intend to start into the bee business the following year.

2. How many hives of bees would do for a beginner?

3. I have a neighbor that lives a quarter of a mile from me who has a few hives of bees. Do you think my bees would gather honey at that distance from home?

4. Do you think Indiana is too far to have bees shipped from Central Illinois? ILLINOIS.

Answers.—1. White clover will grow nicely in a garden, as anyone who has used horse manure in a garden can testify. Get seed and sow it. But usually there is enough clover in all the pastures in your vicinity.

2. From 2 to 6 colonies are best for a beginner. Have at least 2, for with only one you might have a little bad luck and get discouraged.

3. Bees go readily 2 miles from home to gather honey, but your neighbor's few hives will not interfere with yours.

4. Bees are shipped clear across the United States, but it would be best to buy your bees

as close to your home as possible, as shipping bees is expensive.

### Increasing

I am thinking of making increase, and think I will use five hives in making them. I intend to make 20 new ones, and having five old ones the same strength as the others after dividing them, leaving the old queen on the old stand. The plan I intend to go by you will find enclosed.

On April 10 put old queen above with two frames of brood, with a zinc excluder between them, putting brood below and filling out with frames. On April 20 cut out all but one queen cell. That will give me laying queen May 5, leaving them together until the 25th, then divide.

I am going to use five hives for making twenty-five, using four to start them and using the last one for making queen cells for the others, giving queen cells and stuffing them in with grass, starting the last hive on May 15.

MISSOURI.

Answer.—I'm afraid your plan will not come up to your expectations, although I'm none too sure about the plan, as you first speak as though intending to have each colony start its own queen-cells, and later as though having one start cells for all. Perhaps the idea is to have four of them start each a cell for itself and the fifth rear one for itself and twenty extra that will be needed. As I understand it, you will put the queen above an excluder and expect cells to be started on the brood below the excluder. But you cannot rely upon it. Some of them will be pretty sure not to start a cell, and those that do start cells will start too few to make out the total number needed. Again, you will find that, as a rule, queens reared before about the usual time of swarming are not very valuable queens. If you have confidence in the plan, better try it upon one colony, and if it's successful you can call me down for giving poor advice.

### Transferring

1. Some three years ago a swarm of bees settled in an inverted soap box and have staid there since. How can I now get them into an ordinary hive?

2. Will the bees settle down if placed over a hive fixed with frames and foundation combs?

OREGON.

Answers.—1. If you place a hive with frames and foundation right over the box containing the colony, after having inverted the latter so that the two openings will come together, leaving off the bottom-board of the movable-frame hive, the bees will ascend into the upper hive as soon as the other box is full. This should not be done before spring, when there are flowers in the field. During the winter it would be worse than useless. If the queen does not move up into the upper combs, you may drive her up by smoking and drumming the lower hive. Better still would be to transfer the brood and bees by the methods recommended in "First Lessons," "Thousand Answers," or at still greater length in "Langstroth Revised."

2. The bees will go *up* into a hive much more readily than they will go *down* into it, everything else being equal. The heat ascends from a hive of bees, but does not go down, and in the spring they need heat for the brood.

### Moths

I have no bees here, but I own several hundred colonies of bees in Greece and am much interested to learn the business properly. I had a letter from my father saying that my bees suffer from the moths. Those are the worst enemies we have. Our hives are all skeps, but as soon as I learn the business over here I propose to go back and put them in modern hives. I enclose money order for the Bee Journal and "Answers to Thousand Questions. What can I do to prevent the moths?

ILLINOIS.

Answer.—The book which you have just ordered answers your question pretty thoroughly in pages 13-16, on "Beemoths." In a very few words we can say that moths are injurious only to weak and often to queenless colonies—never to strong hives of bees. Of course, in order to control your bees properly, you will need to transfer them from the "skeps" to regular movable-frame hives, for the advantages of the latter are that they enable you to take your hives apart just like a lot of toy building blocks, permitting you to perform any necessary operations.

### Increasing

Would it be a good idea to make an increase in bees in spring, about the time they are ready to swarm? I haven't a good place for my bees to alight if they should swarm, and would not like to lose them. I intend to order my queens and divide my colonies which are about to swarm.

TEXAS.

Answer.—Yes, if you don't want natural swarms and want increase, a good plan is to divide them. Perhaps the best way is to put the old hive in a new spot, leaving the queen with one brood and frames of foundation on the old spot. She will thus have all the field bees, and if you give the old colony a new queen it will be but a short time till both are in good shape for harvesting honey.

### Extracted or Comb Honey

I am in a good location to sell honey to consumers, or retail it. Which do you think would be the most profitable for me to produce, extracted or comb honey?

WASHINGTON.

Answer.—If you can sell extracted honey for two-thirds of the price of comb honey, it will pay better to produce that kind, for you can produce it for less than two-thirds the cost.

### Creosote on Queens

Will bees occupy hives which have been dipped in creosote to preserve them, in place of painting?

WYOMING.

Answer.—You can transfer a colony of bees, comb, brood, queen and bees into such a hive and have them stay, but it is very doubtful whether you can hive a swarm into it and have them stay. Try it. I never did.

### Hiving Two-Pound Packages

Last June I got 2 pounds bees and untested queen from Alabama. Never having had any experience myself with bees, I got a neighbor boy to put them in the hives. He took off the top and put them in on top of brood frames. They stuck around for three or four days and then flew away. Now what I wish to know is, exactly how to put bees purchased by the pound) into a hive, and just how to release the queen. I wish someone would answer this in your Journal before next May.

PENNSYLANIA.

Answer.—Bees want a cavity, in the dark, for their home. So opening a hive and exposing its entire inside to the light of day is perhaps the least satisfactory way of getting them to go in and stay.

If the queen is caged separately from the bees, as is often the case, place her cage at the entrance of the hive, or, if the bottom-board is not fastened, place the cage on the bottom-board a short distance back of the entrance, so the bees may smell her odor from the entrance. Then place the cage containing the bees, open, with its opening in front of the hive entrance. If they hesitate to go in, you may shake a few of them so as to get them started. The whole swarm might be shaken in front after giving them a little syrup, so they will not be inclined to take wing.

A comb of brood, or even a dry comb, inside of the hive is a great inducement for them to go in. Of course, after the bees have gone in, the queen should be released among them.

The hiving of bees by the pound is really the hiving of a swarm. What is suitable in the one case is usually suitable in the other.

### Getting a Start

1. How had I best work, with one big colony, for next spring's run, beginning all over again? My idea was to buy an old colony for wintering, give careful early feeding in spring and introduce an Italian queen as early as temperature will permit.

2. Could I transfer them in spring to a modern Jumbo hive and at the same time supplement them with a pound of bees?

WISCONSIN.

Answers.—1. This should have been answered sooner. If you have bought a big colony for winter, it should have enough honey to winter, especially if you place the hive in the cellar. If they do not have enough food, when spring comes, you may give them some warm syrup, from time to time. As to introducing an Italian queen as soon as temperature will permit, it is all right. But be sure you have the Italian queen, alive, on hand, before destroying the old queen.

2. If you desire it, the colony may be transferred to a Jumbo hive during fruit bloom. But unless they are very weak it will hardly do to buy a pound of bees to give them. There is always more or less danger of fighting, when uniting bees, and a pound of strange bees, fatigued from a long trip, would not do much good. It might pay better to buy that pound of bees and that queen in spring and start a new colony with them.

### Qpeen Find Hive—Clean up Frames—Drones

1. If a queen bee drops on the ground from a comb, will she find her own hive?

2. Will it incite the bees to robbery if we raise the hive one inch in hot weather?

3. Is it proper, after extracting, to put the comb out to the bees to clean up?

4. I had two colonies go wrong last summer. They all turned to small drones. Do you think they had a laying worker-bee? I could not find any queen. What should I do in such a case?

5. When bees are put in hives that have dead sealed brood, will they clean out dead brood?

BEGINNER.

Answers.—1. The queen is rather helpless in finding her home, when she happens to drop on the ground, for the only time she has taken flight was when she went out to mate, or perhaps when she went out with the swarm. Besides, she is usually heavy with eggs and flies with difficulty. Usually when she drops to the ground some of her bees find her and care for her. But I should be very careful to see that she was home safe.

2. If we raise the hive in hot weather when it is overflowing with bees (and there is no need to do it at other times) there will be no danger of robbing.

3. Practical men are not all agreed upon the course to pursue. If the combs are put out, when all is quiet, far enough from any hive to avoid inducing robbing of a nearby colony afterwards, there will be no trouble, though it certainly induces bees to seek easy spoils. But the worst part of it is that you may feed your neighbors' bees as well as yours. The other way is to put the supers on strong colonies, a little after sunset.

4. These colonies either became queenless and had drone-laying workers, or their queens were drone-layers. Such colonies had best be united with stronger ones, for they are of no value.

5. Better cut out the dead brood, although they usually clean it out. There is always a doubt lurking about dead brood. It is carrion, at best.

### Saltpeter—Carniolans—Finding Queen

1. What do you know of the use of saltpeter in bee culture?

2. I have had pure Carniolan bees for 20 years and found them better than Italians and blacks. What is the reason they are not more advertised in the American Bee Journal?

3. I wonder that Doctor Miller does not know of a trick to find the queen in a colony, but have you ever heard of knocking on one side or the other of the beehive to oblige the queen to come onto that side, so as not to have to look on all frames to find the queen?

MONTANA.

Answers.—1. Nothing, except that it is often used for soaking rags to light easily for use in the smoker.

2. Probably for the reason that we have not retained them ourselves, that it is difficult to ascertain when there is hybridization of those bees with the common black, as they are very similar in color. With the Italians, the least admixture of other blood shows readily. The Carniolans are also faulty in being too prone to swarm excessively.

3. Knocking on a honey-board at the top of the brood chamber often attracts the queen and a number of bees there But when it fails, it usually disturbs the bees so as to make the queen more difficult to find afterwards. The same might be said of knocking on one side or the other of the hive body.

## MISCELLANEOUS NEWS ITEMS

### The Illinois State Association

After 29 years of active service as Secretary of the State Association, Jas. A Stone, one of the oldest members, relinquished his office. G. M. Withrow, a young beekeeper of ability, was elected in Mr. Stone's place. We understand that his office is at Mechanicsburg, Ill.

The December meeting was as interesting as usual. The President, Dr. A. C. Baxter, was elected as a delegate to the January meeting of the National Association, to be held in Kansas City.

### Eastern Beemen Meet

A well-attended meeting of the Hampshire, Hampden & Franklin Beekeepers' Association was held in the Chamber of Commerce, Springfield, Mass., on Saturday afternoon, December 6, 1919. Mr. C. H. Taber, of Holyoke, Mass., was elected President, vice A. C. Andrews, resigned. Mr. F. H. Sanborn, of Chicopee, Mass., was elected to succeed Mr. Taber as Vice President, and Mr. H. C. Taber, of Ware, Mass., was elected a Vice President to fill a vacancy. The meeting was addressed by Dr. Burton N. Gates, of the Massachusetts State Department of Agriculture, who had for his subject "Wintering in the Emergency."

S. E. HOXIE, Sec'y.

### Wisconsin

At the Wisconsin State Beekeepers' meeting, held December 3, 4 and 5, at Madison, it was reported that the Association is now composed of 543 members; that there are 30 local associations in the State, 17 of which are affiliated with the State Association and 9 of which had representatives at the meeting. It was also stated that the total attendance at the 49 meetings of beekeepers within the State, during 1919, was 1453.

The officers for the year 1920 are: President, Gus Dittmer; Vice President, J. E. Cooke; Secretary, H. F. Wilson; Treasurer, A. C. Allen.

Considering their population, Wisconsin and Minnesota lead the United States in beekeepers' associations. Let us imitate them.

### Short Course at Ithaca, N. Y.

The New York State College of Agriculture in Ithaca, N. Y., in cooperation with the Bureau of Entomology, Washington, D. C., will give a Short Course in commercial beekeeping during the week of February 23, 1920. This course will be similar to the one given last year, with some important new features added. One hundred and forty-nine beekeepers, many of them among the most extensive in the State, stayed through the entire week and passed a resolution asking for the course again. The indications are that the attendance this year will be more than double that of last year. No tuition fee is charged. All beekeepers are welcome and those wishing to attend are asked to write to George H. Rea, Extension Specialist in Apiculture, College of Agriculture, Ithaca, N. Y., at once and have their names registered for this course. An attempt will be made to secure rooms for all who register in time a d who desire a reservation.

### Chicago Northwestern Meeting

The Chicago Northwestern Beekeepers' Association met in the Rose Room of the Great Northern Hotel, Chicago, on Monday and Tuesday, December 15 to 16. The meeting was presided over by E. S. Miller and a very pleasant and profitable session was held.

Although the crowd was not large, it was very enthusiastic, and the Question Box was one of the chief features. A very interesting talk was given on "Is Beekeeping an Industry, or a Side Line?" by B. F. Kindig, President of the National Beekeepers' Association. Mr. Kindig had statistics to show that the larger beekeeper in Michigan who now has from 100 to 400 colonies derives a good return from his bees. His statistics showed that the smaller the beekeeper the less gross profit he seemed to get from his bees. Mr. Kindig also made a plea for sending a delegate to the coming National Convention at Kansas City, and President E. S. Miller was elected as delegate. Other topics were headed by papers read by Mr. C. P. Dadant, editor of the American Bee Journal, on "Large Hives," and by Iona Fowls, of Gleanings in Bee Culture, on "Selling Honey."

E. S. Miller was re-elected President and John C. Bull Secretary-Treasurer. C. O. Smith, of Chicago, was elected Vice President.

### Big Hives

Keep boosting the big hives. I have 45 now and will have that many more for next spring. It was a poor year for honey here, but my bees made an average of 65 pounds per colony. I use the standard hive for supers, without excluder, and did not get a cell of brood in any of them.

Minnesota.

### Beware of the Aloe

As proof of the fact that beekeeping has not yet become a science in this country, I may mention that a beekeeper in the Eastern Province, who runs a fairly large apiary as a side line, and whose products are sold on the Johannesburg market, this year has done himself incalculable harm, for the honey sent up has been flavored with the nectar from the red poker aloe, and the "eater" of the honey found himself with a throat, which burned like fire, according to the amount of honey eaten. Had he been a practical beekeeper and had studied his flows, he would have arranged the supers in his hives so that when the nectar flowed—and the supplies from this wild aloe are large—this particular flow would have been kept for winter feeding, instead of being placed on the Johannesburg market to the detriment of his reputation.—The South African Poultry Magazine.

### Experience With Foulbrood

My bees had foulbrood and I lost twenty stands because I did not know how to handle them. I bought a book which directed that they be shaken. I waited till the bees were working well on linden and there was plenty of new honey. I shook the strong colonies into new hives and doubled the weak ones, shaking two into one hive. I thus saved 25 stands and they stored 50 to 75 pounds of surplus per colony. I used all my old hives, first cleaning out all the old combs and scorching out the hives. None of the colonies shaken during the flow have since shown the disease again. Some that I shook in May when there was no honey in the field, required feeding and soon had the disease again.

When I undertook to clean up the disease, one could smell it 100 yards and I had no faith that I could save any of the bees. I have $200 worth of honey when I would not have taken any if the bees had not been treated.

Illinois. A. D. SEARS.

**West Virginia Meeting in March**

The Panhandle Beekeepers' Association will hold its 28th annual spring meeting at the Market Auditorium, in Wheeling, on Wednesday, March 10, 1920.

## CLASSIFIED DEPARTMENT.

Advertisements in this department will be inserted for three cents per word, with no discounts. No classified advertisements accepted for less than 35 cents. Count each initial or number as one word.

Copy for this department must reach us not later than the 20th of the month preceding date of issue. If intended for classified department it should be so stated when advertisement is sent.

### BEES AND QUEENS

FOR SALE—200 three-frame nuclei with Italian queens. These nuclei contain three solid frames of capped prood; delivered 1st of May; one-half down, balance just before delivery. Irish Bros., Doctortown, Ga.

"QUALITY" THREE-BANDED ITALIANS from excellent stock; untested queens, 1, $1.50; 6 for $7.50; 12 for $13.50; 50 for $55; 100 for $100. N. J. James, 1185 Bird Ave., San Jose, Calif.

FOR SALE—140 colonies of Italian bees in 10-frame Root hives, well made, painted and in first-class shape. No disease. Ill health reason for selling. Dexter & Knapp, Mound, Minn.

ITALIAN BEES (the kind that fill from 2 to 6 supers), for sale, in new 8 and 10-frame Root hives, at $12 and $15 per colony, if ordered soon. Bees to be shipped by ex-express in April. Queens after May 1. Miss Lulu Goodwin, Mankato, Minn.

FOR SALE—Italian queens from some of the best stock in the United States, mailed as soon as hatched. Safe arrival guaranteed to any part of the United States and Canada. All queens mailed in improved safety introducing cages. Order early. Send for circular. Prices, April to October 1, 75c; 10, $6; 50, $27.50. James. McKee, Riverside, Calif.

1920 PRICES on nuclei and queens, Miller strain. Queens, untested, $1.50 each, $16 per doz.; tested, $2.00 each, $22 per doz. One-frame nuclei, $3; two-frame, $5; three-frame $6.60, without queens, f. o. b. Mason, Miss. Five per cent discount in lots of 25 or more. We have never had any bee or brood disease here. Will have no queens except with nuclei, until June 1. Safe arrival and satisfaction guaranteed. Geo. A. Hummer & Sons Prairie Point, Miss.

FOR SALE—210 colonies Italian bees in 8-frame hives, with 100 supers and 100 shipping cages, at a bargain. C. H. Cobb, Belleville, Ark.

THAGARD'S STRAIN Italian queens, catalog free. See larger ad elsewhere. V. R. Thagard, Greenville, Ala.

HARDY Italian queens No bees W. G. Lauver, Middletown, Pa.

FOR SALE—350 colonies Italian bees in Monroe and Baldwin Counties, Alabama, in 10-frame Langstroth hives. Hoffman frames. Plenty supers and supplies for this year. No disease. One 6-frame Root automatic extractor and other fixtures; extra good range. Reason for selling, am crippled and not able to attend to them. Come look it over. A bargain for cash. W. H. Owens, 68 S. Conception St., Mobile, Ala.

1920 PRICES for "She Suits Me" queens. Untested Italian queen, from May 15 to June 15, $1.50 each. After June 15, $1.30 each; $12.60 for ten; $1.10 each for 25 or more. Allen Latham, Norwichtown, Conn.

ITALIAN QUEENS OF WINDMERE will be ready in May. Untested, $1.25 each; six for $7. Tested, $2 each; select tested, $2.50. Write for quotation on nuclei. Now booking orders. Prof. W. A. Matheny, Ohio University, Athens, Ohio.

FOR SALE—I will book orders for a limited amount for 3-banded Italian bees in 8-frame hives. All queens sent out in May are 1919 tested. Safe delivery guaranteed on journey within 48 hours. Begin shipping May 20

Full colony with testeu breeding queen, $18.
Full colony with tested utility stock, $16.
3-frame nucleus tested breeding queen, $8.75.
3-frame nucleus tested utility stock, $6.75.
2-frame nucleus tested breeding queen, $7.50.
2-frame nucleus, tested utility stock, $5.50.

June and July Delivery:—

1-lb. package bees with untested queen, June, $4; July, $3.50.
2-lb. package bees with untested queen, June, $6.50; July, $5.50.
2-frame nucleus with untested queen, June, $6; July, $5.
3-frame nucleus with untested queen, June, $7.50; July, $6.50.

Tested breeding queens, $5 each. Tested queens, $3 each. Untested oueens, $1.50 each, or 6 for $8.

Terms, 10 per cent with order, balance first of month shipped in; or 5 per cent discount for cash with order. Catalog ready about Feb. 15, free. J. W. Bittenbender, Knoxville, Iowa.

FOR SALE—Leather colored Italian queens, tested, June 1, $1.50; untested, $1.25; $13 a dozen. Root's goods at Root's prices. A. W. Yates, 15 Chapman St., Hartford, Conn.

IT'S MARCHANT'S STRAIN that does the work, that's all. See ad elsewhere. A. B. Marchant, Jesup, Ga.

FOR SALE—After April 15, our golden Italian queens, untested, one $1.60 or $15 per doz.; select untested, one, $1.75 or $18 per doz.; tested, $3 each. Safe arrival guaranteed. Tillery Bros., R. 5, Georgiana, Ala.

FOR SALE—Goldens that are true to name. Select untested, one,$1.50; six, $7.50; 12, $13.50; 60, $65; 100, $100. Garden City Apiaries, San Jose, Calif.

FOR SALE—Golden and three-band queens. Untested, April, May and June delivery, $1.25 each; $12.50 per doz. Satisfaction. R. O. Cox, Rt. 4, Greenville, Ala.

FOR SALE—Pure 3-band Italian queens, as good as you can buy with money. Write for prices. J. F. Diemer, Liberty, Mo.

BEES BY THE POUND, ALSO QUEENS—Booking orders now. Free circular gives prices, etc. See larger ad elsewhere. Nueces County Apiaries, Calallen, Texas, E. B. Ault, Prop.

BEES AND QUEENS from my New Jersey apiary. J. H. M. Cook, 1Atf 84 Cortland St., New York City.

### HONEY AND BEESWAX

FOR SALE—Buckwheat honey, 15c; amber honey, 18 to 22c; clover, 22 to 25c; bulk comb, 23 to 25c, owing to amount wanted. W. H. Hyde, New Canton, Ill.

FOR SALE—1,000 lbs of honey. E. Keister, Orangeville, Ill.

FOR SALE—Clover and buckwheat honey in any style container (glass or tin). Let us quote you. The Deroy Taylor Co., Newark, N. Y.

FOR SALE—Choice "Kentucky" clover extracted honey. Well ripened, thick and rich. Perfectly clean and suitable for table use. Packed in 60-lb. tins, two in a case, at 24½c f. o. b. H. C. Lee, Brooksville, Ky.

WANTED—Comb, extracted honey and beeswax. R A Burnett & Co., 6A12t 173 S. Water St. Chicago. Ill.

FOR SALE—New crop clover extracted honey, two 60-pound cans to case, 25c per pound. Buckwheat and clover mixed, about half and half, 20c per pound. H. G. Quirin, Bellevue, Ohio.

WE BUY HONEY AND BEESWAX—Give us your best price delivered New York. On comb honey state quantity, quality, size, weight per section and sections to a case. Extracted honey, quantity, quality, how packed, and send samples. Chas. Israel Bros. Co., 486 Canal St., New York, N. Y.

WANTED—Honey in 10-lb cans. Lang, 1609 Dayton St., Chicago.

WANTED—White clover or light extracted honey. Send sample; state how honey is put up and lowest cash price delivered at Monroe; also buy beeswax. E. B. Rosa, Monroe, Wis.

OUR CROP OF HONEY is now ready for shipment. It is a good grade white clover with a very small trace of basswood, almost water white. It is put up in new 60-lb. tin cans, two to the case. This honey was all produced by ourselves above queen-excluders, in nice white combs. Then combs were provided so that no honey was taken off until after the season, when it was thoroughly cured by the bees. It costs more to raise a crop of honey this way, as we do not get as much per colony, so we have to have a little more money for this fancy article than the ordinary honey on the market. Try a small order and we feel sure you will buy no other.. We can furnish at the following prices, f. o. b. Northstar: one 60-lb. can $16.50; in cases of two cans, $30 a case, in any sized orders. The crop is short this year and will not last long at these prices. We feel quite sure that the price will not be any lower, so do not be disappointed by not ordering early if you are looking for honey as good as money can buy. D. R. Townsend, Northstar, Mich.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendering. Fred W. Muth Co., 204 Walnut St., Cincinnati, Ohio.

### FOR SALE

FOR SALE—Two No. 17 extractors, $25 each; 100 zinc excluders, 10-frame, 25c, 8-frame 20c each; one 60-gallon honey tank, galvanized, $70; one Dadant style uncapping can, $6; one 10-in. foundation mill, $30; 265 10-frame Ideal supers, rabited corners, 30c each, with frames 40c. Want a Hershiser wax press. Also have 200 nuclei for sale. See large add. C. S. Engle, Beeville, Texas.

GIANT SPIDER FLOWER—Great honey plant. Seed 10 cents per sample pkt. S. W. Terhune, Wortendyke, N. J.

FOR SALE—5-gal. cans; used, but scarcely look it. New corks. Buy now while offered. Cases of two, $1. Bruner, 3836 N. Kostner Ave., Chicago, Ill.

FOR SALE—200 supers for 8-frame hives, about 50 for 1⅞, 150 for plain sections, with fence A1 for 4¼x4¼ sections. All factory made, some mitered at corners; all about as good as new. All new sections and started with 2 in. foundation, $1 each in lots of 10 or more. J. W. Bittenbender, Knoxville, Ia.

NO 7 Remington Typewriter, perfect condition, to exchange for honey extractor or buz saw. E. W. Brown, Willow Springs, Ill.

FOR SALE OR EXCHANGE—Have some splendid bred-to-lay White Leghorn hens that I will sell at $2 each, or exchange for bees Mrs. Etta E. Deabler, Kountze, Texas.

FOR SALE—21 hives bees in 10-frame hives, 1 No. 5 extractor, 300 extracting frames and combs, with supers. C. G. Strieder, Brimfield, Ill.

OLD-TIME BEE BOOKS—50 to 250 years old. Every beekeeper should own at least *one*. Send for price list. John E. Miller, 114 East 27th St., New York City.

FOR SALE—Cameras and Telephoto lenses. If interested in bargains, write me. H. E. Roth, Denver, Iowa.

FOR SALE—Cedar or pine dovetailed hives; also full line of supplies, including Dadant's foundation. Write for catalog. A. E. Burdick, Sunnyside, Wash.

FOR SALE—"Superior" Foundation (Weed process). Quality and service unexcelled. Superior Honey Co., Ogden, Utah.

800 LANGSTROTH FRAMES, flat, 5c each. Extractor wanted. Lorenzo Clark, Winona, Minn.

TO BEEKEEPERS that ship pound packages: I am acquainted with your troubles. It's early queens you need. I can fill your orders. A. B. Marchant, Jesup, Ga.

## WANTED

WANTED—Italian bees in 10-frame hives. Thos. Cordner, Rt. 7, Sparta, Wis.

WANT to buy some Italian bees, full colonies in 10-frame Hoffman; also pump shotgun. James Wheeler, Maroa, Ill.

WOULD LIKE to hear from owner of small farm which is for sale. Wisconsin, Minnesota, Iowa or Illinois preferred. Do not want sand or swamp land. A. Runge, Elizabeth, Ill.

WANTED—Your old combs, cappings and slumgum to render into beeswax. We get enough more wax with our well equipped presses to pay for our work. Dadant & Sons, Hamilton, Ill.

WANTED—Circular saw table, combination preferred. What have you? Ed. Swenson, Spring Valley, Minn.

WANTED—To buy two or more colonies near Chicago. John Stettka, 1001 W. 16th St., Chicago, Ill.

WANTED—200 or less colonies of bees (any style hive) for spring delivery. Address. A. W. Smith, Birmingham, Mich.

WANTED—About 100 colonies to work on shares in Wisconsin, with or without option to purchase location, by apiarist with 100 colonies of his own. Winter address: E. W. Brown, Willow Springs, Ill.

WANTED—To buy bees free from disease, for April delivery, in southeastern Minnesota or western Wisconsin. State how many, kind of hives and price. P. B.. Ramer, Harmony. Minn.

WANTED—For exhibition purposes, naturally built combs, partly or fully drawn out. Such combs should not have over 25 per cent drone-comb and should be the product of the bees themselves, without use of foundation. Write us describing what you have and we will name our price on same. American Bee Journal, Hamilton, Ill.

WANTED—Your order for "Superior" Foundation. Prompt shipments at right prices. Superior Honey Co., Ogden, Utah.

## SUPPLIES

FOR SALE—New cypress hives, reversible bottom-boards, telescope metal covers, self-spacing frames, of quality and price that will please you. Manufactured by myself. Write for particulars. O. L. Rothwell, Gillett, Pa.

FOR SALE—Buckwheat extracted honey in 60-lb. cans, 2 cans per case. Bert Smith, Romulus, N. Y.

FOR SALE—Brood frames, hive bodies, covers and bottoms. Write for prices and particulars. I can save you money, as we make them here, where lumber is reasonable in price. F. D. Bowers, Sugar Grove, Pa.

SEND us a list of goods wanted and will quote you lowest prices. We are the money-saving house. Price list free. Try us. H. S. Duby & Son, St. Anne, Ill.

FOR SALE—New and second-hand equipment. 400 comb honey supers 4¼x4¼x1⅞—10-frame; 2-frame extractor; 100 shallow extracting supers, 10-frame; Bartlett-Miller capping melter; 5 Dadant hives with 1 extracting super; Root capping melter; 100 8-frame hives, complete; 1 steam knife with generator; 100 8-frame hive covers, Excelsior; 150 fences, 4¼ sections; 100 8-frame hive bottoms; 2 Standard smokers; 3 Junior smokers; 400 Hoffman frames, new; 500 metal spaced frames, new; 1,000 pounds Superior medium brood foundation; 07 pounds Dadant's medium brood foundation 4½x10½; 16 10-frame hive bodies, new. All good, used but one season, and some never unpacked. Write for prices on what you want. Sunnyside Apiaries, Fromberg, Mont.

FOR SALE—Good second-hand 60-lb cans, two to the case; used only once, 60c per case, cash with order. E. B. Rosa, Monroe, Wis.

FOR SALE—1,000 Standard bee hives in flat 8 and 10-frame sizes; supers with sections; full depth and shallow extracting frames. Entire lot new and strictly first-class. We will sell in large or small quantities at low prices. The Stover Apiaries, Helena, Ga.

FOR SALE CHEAP—Ninety 8-frame dovetailed hives, mostly Root make, used one year. Absolutely free from disease. Expect to change my bees from 8 to 10-frame hives in March. Write, H. L. Edmonds, Bessemer, Ala.

I MANUFACTURE cypress bee hives, and sell Lewis' beeware. Write for booklet. J. Tom White, Dublin, Ga.

## SITUATIONS

WANTED—One experienced bee-man. Must understand outapiary work for comb and extracted honey and the handling of motor trucks. Write full particulars, experience, reference, age and salary wanted, in first letter. I can also use one helper. Can give permanent employment to the right men. W. J. Stahmann, Clint, Texas.

WANTED—Queen breeder for 1920 season. State experience and salary expected. Also need helper. M. C. Berry & Co., Hayneville, Ala.

WANTED—Man for season of 1920 to work with bees. State age, experience and wages. We furnish board. Opportunity for permanent situation to right man. Also want man to work in shop, put up honey and do general shop work and make deliveries. The Rocky Mountain Bee Co., Box 1319, Billings, Mont.

WANTED—The Boulder Apiaries, one of the largest and most modern and up-to-date extracted honey producers in the West, wants 2 experienced bee-men for the season of 1920. State all particulars in first letter. E. A. Knemeyer, 2328 South St., Boulder Colo.

WANTED—Will give experience and fair wage to active young man not afraid of work, for help in large, well-equipped set of apiaries for season starting in April. State present occupation, weight, height, age and beekeeping experience, if any. Morley Pettit, The Pettit Apiaries, Georgetown, Ont.

BEE STUDENT wants position in apiary one year, beginning February, in Idaho, Washington or Oregon. State wage. Address J. W. Hacker, College Station, Pullman, Wash.

WANTED—One experienced man and students, as helpers with our 1,000 colonies. Best opportunity to learn the business from A to Z, in the actual production of carloads of honey; theory also. Write immediately, giving age, height, weight, habits, former employment, experience, references, wages, photo, all in first letter. E. F. Atwater, Meridian, Idaho. Former Special Field Agent in Beekeeping, U. S. Dept. Agr., for California, Arizona and New Mexico.

WANTED—Good bee-man to run 500 colonies bees for extracted honey during coming season. Give references, salary expected and experience in first letter. Dr. D. W. Gibson, Beaver, Utah.

WANTED—Young married man, ex-soldier, experienced honey producer, wants to take up work with some up-to-date and growing bee business. Best of qualifications and references. Would expect to buy an interest in business if satisfactory. Closson Scott, 900 Parkman St., Warren, Ohio.

WANTED—One or two good queen-rearing men to begin work February 15, 1920. Nueces County Apiaries, Calallen, Texas.

## MISCELLANEOUS

WANTED—Beeswax, old combs and cappings to render on shares. Will pay highest market price and buy your share of the beeswax. F. J. Rettig & Sons, Wabash, Ind.

IF you want early queens, send in your order now; don't wait till it's too late. A. B. Marchant, Jesup, Ga.

WRITE for shipping tags and our prices for rendering your old combs, cappings, etc. We guarantee a first-class job. The Deroy Taylor Co., Newark, N. Y.

**ITALIAN QUEENS**

The Old Reliable Three-Banded Italians. The best allround bee to be had. Queens ready to mail April 1. Will book orders now. Will guarantee safe arrival in United States and Canada. Prices for April and May:

Untested,, $1.50; 6, $8; 12, $15
Tested, $2.25; 6, $12; 12, $22.
Select tested, $3 each.

Descriptive circular and price list free.

**JOHN G. MILLER,**
723 C Street, Corpus Christi, Texas.

**AM BOOKING ORDERS**

now for 1920 queens. Untested, $1.50 each; 25 or more, $1.35. Tested, $2.50 each; 25 or more, $2.25. Select tested, each, $3.

Limited amount of bees for early shipment. My descriptive circular tells about it. Write me your needs.

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**Forty-Eight Years' Experience in Queen-Rearing**

**Breed Three-Band Italians Only**

**PRICES OF QUEENS**

| | Nov. 1st to June 1st | | | June 1st to July 1st | | | July 1st to Nov. 1st | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1 | 6 | 12 | 1 | 6 | 12 | 1 | 6 | 12 |
| Untested | $2.00 | $ 9.00 | $16.80 | $1.50 | $ 8.00 | $14.50 | $1.30 | $ 7.50 | $13.50 |
| Select Untested | 2 25 | 10.50 | 18.00 | 2.00 | 9.50 | 16.00 | 1.75 | 8.50 | 15.00 |
| Tested | 3.00 | 16.50 | 30.00 | 2.50 | 12.00 | 22.00 | 2.00 | 10.00 | 18.50 |
| Select Tested | 3.50 | 19.50 | 36.00 | 3.00 | 16.50 | 30.00 | 2.75 | 15.00 | 27.00 |

**Select queens tested for breeding, $5.**

**The very best queens, tested for breeding, $10.**

Queens for export will be carefully packed in long distance cases, but safe delivery is not guaranteed. I sell no bees by the pound, or nuclei, except with high-priced breeding queens. Capacity of yard, 8,000.

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Importer and breeder of three-band Italian Queen Bees.

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| Imp. Blood Turnip Beet . | .05 | Fine Double Curled Parsley | .05 |
| Crosby's Egyptian Beet . | .05 | Imp. Guernsey Parsnip . . | .05 |
| Ey. Jer. Wakefield Cabbage | .10 | Best Extra Early Peas . . | .10 |
| Oxheart Carrot . . . . | .05 | English Wonder Peas . . | .10 |
| Golden Bantam Sweet Corn | .10 | Ruby King Pepper . . . | .05 |
| Ey. Evergreen Sweet Corn | .10 | Quaker Pie Pumpkin . . | .05 |
| Early Fortune Cucumber . | .05 | Imp. Fr. Breakfast Radish. | .06 |
| Sel. White Spine Cucumber | .05 | Crimson Giant Radish . . | .05 |
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| Early Prize Head Lettuce | .05 | Bloomsdale Spinach . . . | .05 |
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We furnish full colonies of Italian bees in double-walled hives, single-walled hives, shipping boxes and 3-frame nucleus colonies.

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**NASSAU, CO.**

# Crop and Market Report

Compiled by M. G. Dadant

The local demand from the consumer, for honey, continues strong. Most small beekeepers have cleaned up their supply of honey and are buying outside to supply their customers for the balance of the season.

One of the largest honey bottlers has withdrawn from the market, having enough honey to supply his trade for the balance of the season. Another is still buying to some extent.

The foreign demand has not been as active as early in the fall. The rate of exchange to most foreign countries is so great as to make the cost very high. It is also evident that considerable honey was shipped abroad earlier without a definite market, so that in some instances honey is quoted lower in Liverpool than it could be bought for in California.

## THE VISIBLE SUPPLY

Considerable honey still remains in the hands of producers awaiting a market. Most of the Colorado crop is sold and Texas has cleaned up all stocks through its association. The California Association still has some on hand, and there is also some honey in the southeast awaiting a market.

There should be no difficulty, however, in placing the balance of the 1919 crop before the new honey begins coming in.

## PRICES

California honey brokers quote an advance of from one to two cents a pound on honey, showing a stiffening of the market. Best white honey is now bringing 19 to 20 cents f. o. b. California common points.

The price of sugar in the east brings it almost on a level with honey. In fact one New York paper is disposing of a car of honey to its subscribers, in original packages at 23 cents, which was the same price as sugar.

## CONCLUSION

It appears as if the crop would all move at present prices, with a possibility of a slightly rising market till the new crop is available.

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We have just completed publication of two new bee books, special in their field, and for which there has been insistent demand

AMERICAN HONEY PLANTS

Including those important to the beekeeper as sources of pollen

By FRANK C. PELLETT

This book is the result of many years of personal investigation and travel from New England to California and from Canada to Florida and Texas to secure first-hand information on the sources of nectar and pollen. It is splendidly illustrated with 156 photographs, and describes the honey plants of all parts of America. A list of the honey plants of each State is given separately and the plants described in alphabetical order.

A knowledge of the flora is important to every beekeeper, as it is often possible to double the crop by moving an apiary but a few miles. This book is written by an expert beekeeper and a competent observer, only after having visited apiaries in most of the important honey-producing districts.
300 large 8vo pages. Enameled paper. Price $2.50.

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By M. G. DADANT

The development of beekeeping has been in direct relation to the extension of outyards in most localities. The Dadant family has kept bees extensively in the same locality for three generations and the author of this book has spent his life in commercial honey production.

The book deals with the business of beekeeping on a large scale, and describes the methods and practice of the most successful beemen. Special chapters on honey houses and equipment, autos and trucks and similar apparatus required by the extensive honey producer.

125 pages, 50 illustrations. Price $1.

Add 75 cents to the price of either of the above books and get the book and the American Bee Journal for a full year.

AMERICAN BEE JOURNAL, Hamilton, Illinois "falcon"

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Don't you remember the year you got caught without having enough hives, sections and foundation when you thought you did? Surely you aren't going to get caught this year. Make the most of your time before the rush begins by ordering those "**Falcon**" supplies. This gives you a fine opportunity to get them nailed and painted so that they can be put to immediate use in the spring.

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| Untested | $2.00 | $ 9.00 | $16.80 |
| Select untested | 2.25 | 10.50 | 18.80 |
| Select tested | 3.50 | 19.50 | 35.00 |

Orders booked now for May delivery, one-fourth down, balance to be paid before queens are shipped. Pure mating, safe arrival and entire satisfaction guaranteed. Wings clipped free.

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I am booking orders for April to October deliveries; my queens are bred from imported stock, they are hardy, prolific, gentle, disease-resisting and honey producers. Untested queens $1.50 each, $7.50 for six. I guarantee pure mating, safe arrival and perfect satisfaction. Catalog free.

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Buy queens from the man who specializes in queens: First—that you may expect prompt service. Next—that you can depend on getting full value for the price you pay. Because queen work neglected to do something else is sure to show up somewhere, sometime. Last, but not least, know that you get what you order; buy from the man who advertises one strain only from the same yard.

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Satisfaction and safe arrival guaranteed, or your money back. Prices cash with order are as follows:

| | Before July 1. | | | July 1 to Nov. 1. | | |
|---|---|---|---|---|---|---|
| | 1 | 6 | 12 | 1 | 6 | 12 |
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| Select Untested | 2.25 | 9.50 | 18.00 | 1.50 | 7.50 | 13.00 |
| Tested | 3.00 | 16.50 | 30.00 | 2.00 | 10.00 | 18.50 |
| Select Tested | 3.50 | 19.50 | 35.00 | 2.75 | 15.00 | 27.00 |

No nuclei except to accompany tested or select tested queens. Write for prices.

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I will also take orders for 200 two and three-frame nuclei, shipments to begin about April 15 to June 1, at the following prices:

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Beeswax is the most costly product of the honeybee and since wax for comb building can only be produced at the expense of many times its weight in honey it is well that the ingenuity of man has invented one of the greatest aids to profitable beekeeping—the Aluminum Honeycomb.

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5. **Save loss from melting and destruction by animals and insects**

"The Aluminum Comb 'MONEYCOMB' is here to stay; its assistance to beekeepers is invaluable.
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FACTORY AND OFFICE
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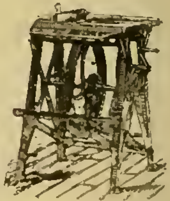

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Prices f. o. b. here, by express only, 2-lb. pkg. bees, $4.65; 3-lb. pkg. bees, $6.65. Queens, untested, $1.35; tested, $2.50. Terms, 25 per cent with order, balance 10 days before delivery.

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Dadant's incomparable Foundation is always kept in stock. Western Beekeepers can be supplied advantageously.

BEEKEEPERS, wherever they may be located, before deciding where to obtain supplies, should write to The Diamond Match Co. for prices, and for their Beekeepers' Supply Catalogue.

This Company are the largest manufacturers in the world who make Bee Supplies. They own their own timber lands, mills and factories, and supply goods direct from the tree to the beekeeper.

Full advantage of this low cost of production is given to the purchaser.

The Apiary Department (which is in charge of experienced supply men, who are also practical beekeepers) maintains a constant excellence of product and offers unsurpassed service.

**The Diamond Match Co.**
Aplary Department CHICO, CAL., U. S. A.

# 113,756 POUNDS OF COMB FOUNDATION

On the date this is written, Jan. 2, 1920, our company has a total in orders for the New Root-Weed Comb Foundation of 113,756 lbs. That is a big lot of comb foundation. It will fill six big freight cars full. We never before have had at this season so many and so large orders for comb foundation as we have today.

WHY are the beekeepers from all over the world sending orders for comb foundation in these amounts to this company? The answer can be given in one word—

## CONFIDENCE

When we recently announced a new Root-Weed Comb Foundation that we believed would prove to be one of the greatest improvements made in comb-foundation manufacture, the beekeepers of America believed us. They took some account of our 50 years in the manufacture of beekeepers' supplies and our long record in ever trying to improve the beekeepers' appliances and utensils. We appreciate this renewed evidence of their confidence in receiving as they have our promise to give them a better comb foundation.

## OUR PROMISE

The new process, we told beekeepers, had to do with both the refining of the wax and the milling of the wax sheets. We promised that this new comb foundation would be a product nearer to that of nature's own than any other manufactured foundation. We today re-affirm that promise.

By the new refining process, we are today getting the best wax we have ever secured, with a true waxy aroma that is lacking in all wax refined by the acid processes.

## OUR THANKS

At the head of this page, in large type, we have placed the figures that beekeepers have piled up for our New Root-Weed Comb Foundation. Those figures spell the Confidence of the beekeepers of America in the promises and the products of this company. At the beginning of another year, we wish to thank our great host of beekeeper friends for this confidence.

## THE A. I. ROOT COMPANY

MEDINA, OHIO

# AMERICAN BEE JOURNAL

MARCH, 1920

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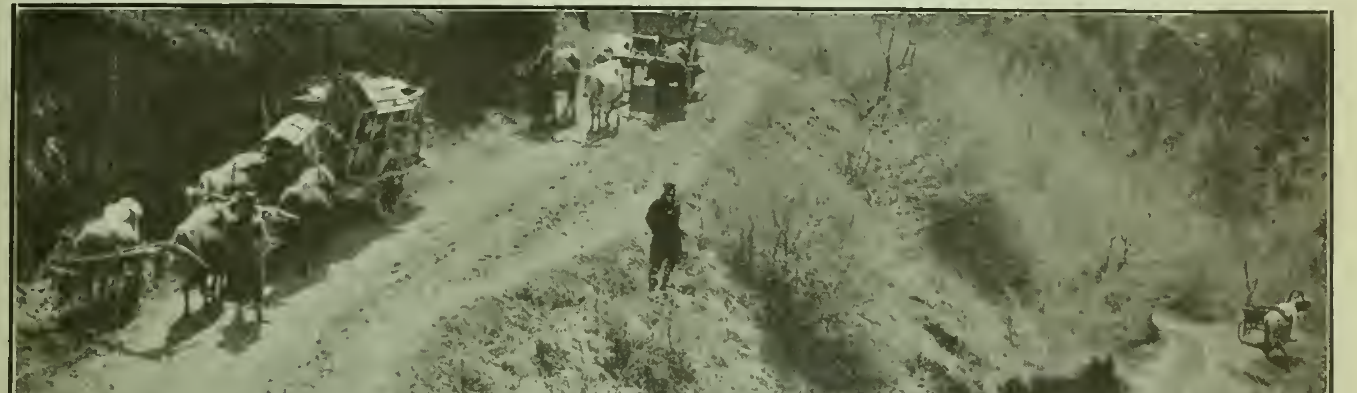

MOVING BEES IN MOUNTAINS OF FORECAUCASUS. NOTE TWO-WHEELED CARTS AND OXEN.

*The Fred W. Muth Company*

**The Golden Months of Opportunity**

*for the successful beekeeper are*

**February, March and April**

This is the time of the year to nail and paint the supplies needed for your 1920 crop of honey

**We Render Your Old Combs**

and pay the market price for the wax rendered, less 5 cents per pound rendering charges. Write us today

In spite of transportation difficulties and delays we are in position to promise prompt deliveries from our complete stock of famous

**Lewis Beeware**

Besides, your order now will save you money, as there is a tendency for prices to advance still higher.

**Write for Our Catalog**

If you do not receive our catalog each year, write at once.

**1920 issue is now ready.**

WE ARE DEALERS IN

**Root's Extractors and Smokers—Dadant's Foundation and the Famous Lewis Beeware**

HONEY

WHEN YOU HAVE HONEY FOR SALE

Send us sample and give best price delivered here. We buy every time you name an interesting price and remit the day shipment is received. **Send us your old combs for rendering.**

BEESWAX

*If you want prompt shipment give us your order today*

**THE FRED W. MUTH CO.**

*"The Busy Bee Men"*

CINCINNATI, OHIO

**'GRIGGS SAVES YOU FREIGHT"**

**TOLEDO**

We know you are not the fellow who waits until the last minute before ordering his supplies.

WE HAVE a LARGE stock of new goods to rush to you the minute your order arrives.

Send us list of goods wanted at once and receive prices, with early order discounts.

These 60-lb. cans will soon be gone; better hurry your order in at once. Two men took a car load.

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Can use limited amount of white clover honey, if price is in line.

FREE Catalog of Bee SUPPLIES for the asking.

**BEESWAX WANTED**

Cash or exchange for supplies. We pay highest market price.

**THE GRIGGS BROS. COMPANY**

**Dept. 24 TOLEDO, O.**

**"GRIGGS SAVES YOU FREIGHT"**

**BEE SUPPLIES**

We carry a complete stock of supplies at all times, and can make prompt shipments. Our prices will interest you.

**Send Us Your Inquiries**
**A. H. RUSCH & SON CO.**
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**WESTERN BEEKEEPERS!**

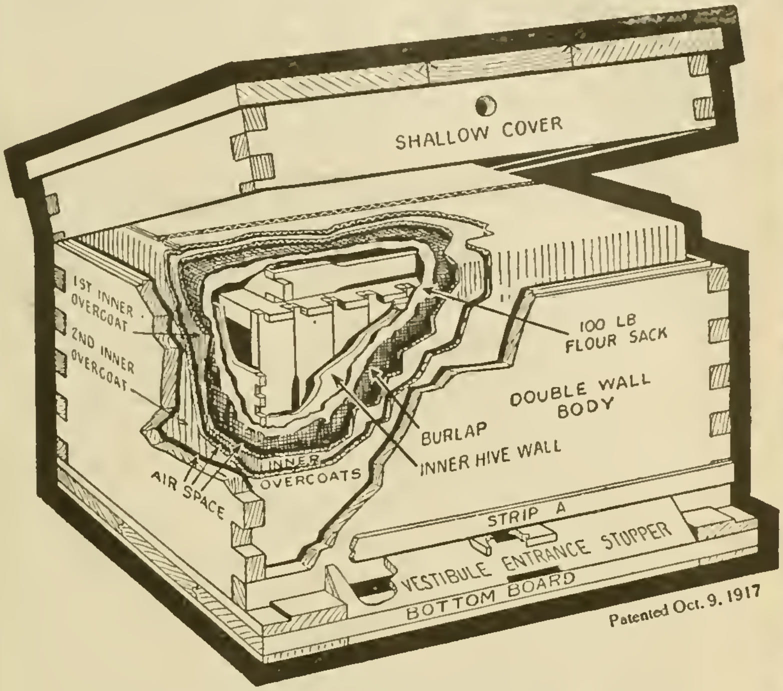
We handle the finest line of bee supplies. Send for our 68-page catalog. Our prices will interest you.

**The Colorado Honey Producers' Association, 1424 Market St.,**
**Denver, Colo.**

Winter Problem Solved

BY THE

**Hive with an Inner Overcoat**



**NOW FURNISHED WITH JUMBO DEPTH OR STANDARD HOFFMAN FRAMES**

Do you know that E. D. Townsend & Son, one of Michigan's most extensive beekeepers, with their 1,100 colonies of bees, have three yards of Government tenement winter cases that they have discarded? One beekeeper speaks of these tenement winter cases recommended by the Government, as ice boxes. With their thick walls they are slow to warm up during an occasional warm day throughout the winter. There are occasions when one cleansing flight will result in successful wintering. Protection Hives with the Inner Overcoats will have bees bright and lively at the entrances during clear, but cool days, when not a bee will be in sight at the entrances of other hives and styles of winter packing. Think of the saving in expense for cases, time and labor in packing and unpacking and the simplicity of putting your bees safely into winter quarters with the Protection Hive as compared to the tenement winter case. With this hive you have an efficient, compact, substantial equipment without the litter of packing materials and the inconvenience of having them around. Send for special circular and 1920 catalog.

**TIN HONEY PACKAGES**

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| 2 lb. Friction Top Cans in cases of 24. | 5-lb. Friction Top Pails in cases of 12. |
| 2 lb. Friction Top Cans in crates of 612 | 5-lb. Friction Top Pails in crates of 100. |
| 2½-lb. Friction Top Cans in cases of 24. | 5-lb. Friction Top Pails in crates of 203. |
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SPECIAL PRICES

Crates of 100 five-pound pails, $8; crates of 200 for $15.

Crates of 100 ten-pound pails at $12.50. Sixty-pound cans, two in a case, at $1.30 per case. Shipments made from Michigan, Ohio, Illinois and Maryland factories.

**A. G. WOODMAN CO.**

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**HERE THEY ARE MR. BEEKEEPER**

**at Newark, Wayne Co., N. Y., ready to answer your call. The best of everything. Just read this list:** Lewis Beeware, Sections, Shipping Cases, Frames, Hives, Hershiser Wax Presses and other supplies, Dadant's Unexcelled Foundation, all standard weights and sizes; also the Electric Wire Imbedder, Bingham Uncapping Knives, including steam heated, with oil stoves and generators. Bingham Smokers, all sizes, with geunine leather bellows; Root's Extractors, all sizes of hand and power machines; Bee Books, written by all leading authors in beedom.

All sizes of Friction Top Pails, and also 60-lb. Cans, new and second hand. Also Cement-coated Nails for nailing beehives and supplies; and all sized spools of Tinned Wire, Bee Brushes, Feeders, Queen-Rearing Cages, Bee Gloves and Capping Melter, and all practical supplies you will need.

A market for your honey or wax and a plant to render your old combs and cappings.

Over 1,000 beekeepers took advantage of this service station at Newark in 1919 for the first time. Now all together for a greater 1920.

New catalog free. Our discounts will save you money.

**THE DEROY TAYLOR CO., Newark**
**(Wayne Co.) New York.**

**TWO CARLOADS SUPERIOR FOUNDATION**

We had orders on hand February 1 for over two carloads of SUPERIOR FOUNDATION, approximately 60,000 pounds. Our present manufactured stock assures prompt deliveries throughout the season. Our machines have been in constant operation all winter anticipating the heavy demand, and will be running overtime during the spring and summer months. We have doubled our Ogden factory in size and are adding additional machinery.

We also carry large stocks of SUPERIOR FOUNDATION at our Idaho Falls, Idaho, and Riverside, California warehouses. For the convenience of our California beekeeping friends we have opened up a branch house at Riverside, Calif., where our Mr. Fred W. Redfield is in charge at present.

BEESWAX WANTED. We require over 30 additional tons of beeswax at highest market prices during the next four months. There's a reason. Acquaint yourself with the advantages of SUPERIOR FOUNDATION if you have not yet used it. Special prices on request. State quantity desired.

**SUPERIOR HONEY CO., Ogden, Utah** (**Manufacturers of Weed Process Foundation**)

**QUEENS** **BEES BY THE POUND** **QUEENS**

Booking orders now with one-fourth down, balance just before shipping. Two per cent discount on January orders with full remittance. We have for several seasons shipped thousands of pounds of bees all over the United States and Canada. From Wisconsin last year, when my old-time beekeeping friends heard that I had bought bees from a man in Texas, they called me a fool; but now I have more bees and more honey than any man in Green County; it is the talk in this part of the woods. (Same party has in his order again for over a thousand dollars worth for spring shipping.) From West Virginia the State Apiarist pronounced my **queen** one of the finest **queens** he ever saw. "To say that I am well pleased would put it mildly; will want more bees and queens in the spring." **Guarantee** shipment to be made on time. **Free** circular explains, also gives prices on bees by parcel post, nuclei, etc.

| **Prices F. O. B. Here by Express** | **Queens** |
|---|---|
| 1-lb. pkg. bees $2.40, 25 or more $2.16 | Untested $1.50 each, 25 or more $1.35 |
| 2-lb. pkg. bees $4.25, 25 or more $3.83 | Tested $2.50 each, 25 or more $2.25 |
| 3-lb. pkg. bees $6.25, 25 or more $5.62 | Select tested $3.00 each |

Add price of queen when ordering bees.

**NUECES COUNTY APIARIES, E. B. AULT, Prop. CALALLEN, TEXAS**

Read ***"THE BEEKEEPER"***

The only Canadian bee publication. Keeps beekeepers closely in touch with Apicultural conditions in Canada. It is the official organ of the Beekeepers' Associations for the three provinces—Ontario, Manitoba and New Brunswick. Beekeeping and horticulture are effectively combined to make a live, attractive and practical publication.

**Price, postpaid, $1 per year**
**United States, $1.25 Foreign, $1.50**
**Send for a free sample copy**

**The Horticultural Publishing Co., Ltd., Peterboro, Ontario**

**EARLY NUCLEI FOR SALE**

I will have 200 two and three frame nuclei for shipment in March and April and desire to ship to parties wanting 25 or more nuclei. Two frame nuclei, $4.00 each, three frame nuclei, $5.00 each without queens. When queens are wanted, add $1.50 for untested and $2.50 for tested queens. Orders must be booked early and a deposit made of 25 per cent of each order. No personal checks accepted.

**C. S. ENGLE, Beeville, Texas**

**WE WANT**

**BEESWAX**

The tremendous demand for **Dadant's Foundation** requires that we have a large stock of beeswax on hand and in transit at all times.

We are therefore situated so that we can pay highest prices, both in cash and in exchange for bee supplies. Write us stating quantity and quality of beeswax you have and we will give you our very best prices either f. o. b. Hamilton or your shipping station, together with shipping tags and instructions.

When ordering your stock of bee supplies for your season's use, be sure to stipulate

**DADANT'S FOUNDATION**

*Every inch, every pound, every ton equal to any sample we have ever sent out*

**YOU CANNOT AFFORD NOT TO USE DADANT'S FOUNDATION**

We render combs into beeswax.
We work beeswax into Dadant's Foundation.
We buy beeswax for highest cash and trade prices.
We sell a full line of the best bee supplies.

**PRICES AND CATALOG FOR THE ASKING**

**DADANT & SONS, Hamilton, Illinois**

# A WORD TO THE WISE

Be on your guard for freight delays early this season.
Uncle Sam is trying to move the 1919 grain crop.
Only closed cars are taken for this project.
Beekeepers' supplies are shipped in closed cars.
This portends delays in securing your "Beeware."
Early orders are likely to get through promptly.
Better write your "Beeware" distributor today.
Don't lose a honey crop because of freight delays.

**"BEEWARE" INSURANCE**

Did you read in the January Bee Journals about the seven "Signs of Progress" embodied in Lewis "Beeware" this year?

"Beeware" users will have assurance of all the honey in their locality this year. The "Beeware" sign stands for quality, workmanship and Lewis service.

The "Beeware" distributor whose name is on the front page of your catalog can give you all that "Beeware" stands for. Write him.

**IF YOU HAVE NO "BEEWARE" CATALOG, A PENNY POSTAL BRINGS ONE**

LOOK FOR

BEWARE
WHERE YOU BUY YOUR
BEEWARE
LEWIS
WATERTOWN WIS U.S.A.
MAKES THE FINEST

THIS MARK

BRANCHES AND DISTRIBUTORS EVERYWHERE

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**G. B. LEWIS COMPANY,** WATERTOWN, WISCONSIN
MAKERS OF BEEWARE

AMERICAN
BEE JOURNAL

VOL. LX—NO. 3 HAMILTON, ILL., MARCH, 1920 MONTHLY, $1.00 A YEAR

# BEES BY PARCEL POST

## Description of a New Cage for Sending Bees by Mail

By Allen Latham

IN the number of American Bee Journal for May, 1919, was published an article under this title, and in that I promised to describe my device for shiping bees by parcel post. Since the first article was written I have had much more experience with the shipping case which I have invented and used, and shall tell frankly of its deficiencies as well as it excellences.

In the May article I mentioned the splendid success I had had with this case. This success continued during the season of 1919 in every case where the trip did not consume over four or five days. But this past summer I essayed to send bees to England, also to a distant point in California. Whatever the cause, I have to admit failure in all of these long distant shipments. Short distance shipments are one thing, while those that consume ten days or two weeks are another. A trip across this continent, thru the desert west with its arid atmosphere, and a trip across the Atlantic with its humid atmosphere, are again very different.

The editors of this magazine have prepared cuts of my shipping case. These with my description should make very clear the principles of this case and method of carrying out these principles.

As said before, every effort has been made to devise a container in which the bees would normally keep quiet and thus not use up their energy in wasteful excitement. As will be seen, this is accomplished by making the case dark and furnishing the confined bees with air thru indirect passages.

This case is a six-walled box, made either of thin board or some strong material like the various wall-boards now sold very commonly. The bottom is double. The two bottoms are spaced apart about three-fourths of an inch. The inner bottom has a round hole some three inches in diameter. This hole is surmounted by either a cone or a cylinder of wire cloth. In the illustration the case has a cone or thimble of wire cloth rising some three inches, but sometimes I substitute a cylinder of cloth rising five inches. The side walls vary in depth. Two of them, not adjacent ones, extend to cover both bottoms, while the other two cover only the inner bottom. Thus a space is left on two sides at the bottom for ventilation. These open spaces are shielded from rays of light by strips or blinds fastened on raised blocks. These blinds and the bottoms are painted a dull black on the inside surfaces so that any rays of light getting past the blinds are largely absorbed and thus very little light indeed gets into the interior of the case.

Package of Bees as it reached Hamilton

The cover or top of the case is removable and to this is fastened nearly a pound of soft candy. No arrangement is made for water on the theory that the bees keep the air within so humid that they feel no need of water. In fact, experience with the case lends credence to the idea that often the bees suffer thru an excess of moisture rather than from a lack. This was unquestionably the case with the shipments that went to England. The surviving bees in those shipments were daubed and the food dribbling. On the other hand, the last shipment to California arrived in a condition suggesting that the bees starved from lack of moisture, which they needed to liquefy their candy.

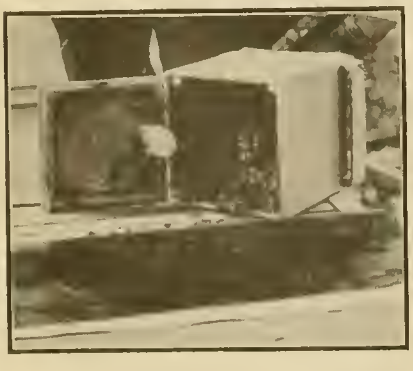
Right at this point I would suggest that experiments should be carried out to determine the moisture content of food given bees in transit. This content should vary with the conditions of the journey they are to traverse. We ought to have available some data that will inform us as to the needs of the different routes over which bees may be sent. Some routes need very dry feed, while others need very moist feed.

I am well aware that most persons upon first seeing this case will not be disposed in its favor. It is so contrary to their accepted ideas of the needs of bees that they will naturally condemn it. Few there are but will say at once that there is insufficient ventilation, but a second look will convince any keen observer that this case, though it may not force air upon the bees, does, nevertheless, furnish them an opportunity for getting air.

After bees have been imprisoned in one of these cases an hour or more, one can, by placing an ear next to the case, hear a few bees lazily humming. These bees are keeping a slow current of air going into and out of the box. Some 99 plus per cent of the bees are clustered in absolute quiet. This condition prevails for many hours, even for a day or two. After a confinement of two days or so, once in a while the bees will set up an uproar. They have been shut in as long as their patience permits. They wish to get out and fly. During the third, fourth and fifth days of confinement these periods of uproar will occasionally take place, the interval of time between the uproars varying with outside conditions. If the air is cool the uproar will almost cease, but if it be a hot and muggy day the interval will be small. The bees are now reaching a danger point. Unless the journey soon ends and the bees set free they will waste their vitality just as they do in ordinary shipping cases.

It is still a question in the writer's mind whether any case can be devised that will admit of the safe transportation of bees in hot weather if the trip is to consume over four or five days. The instinct of the bee is against long-continued confinement in hot weather. The bees chafe to be liberated ,and though darkness will keep them quiet for a long time, it will not fool them beyond a certain limit.

The writer is not a large shipper of bees by the pound. His total shipments in the last three years are probably under two hundred. Setting the number at 200, allow me to state the percentage of failure. The first loss was a 2-pound package sent only 100 miles. The express company let this package be held up enroute until the bees starved. The next loss was a shipment into Canada. This shipment was delayed in the customs house and the bees reached and passed the danger point. They got into a frenzy and ran amuck. They arrived a sticky dead mass of bees in the bottom of the case. The next loss was a shipment to a point not very distant. These bees were put up at the close of a day of heavy honey flow. The bees were bursting with new nectar. Evidently after they were confined they raised the temperature of the box through their conversion of the nectar and brought on a speedy death. Two have been made to England and two to California. All four of these have been either total failures or practically so. So far as I know, every other shipment has gone through in excellent shape, and in most cases the recipients have written me expressing their pleasure over the fine condition of the bees upon arrival.



Few bees had died after three weeks confinement.

My experience tells me that this case can be relied upon to produce uniformly excellent results just so long as no effort is made to get it to do the impossible and so long as one uses care to see that the case is properly prepared. The things to avoid are shipments that will consume over five days, food that is very moist or very dry, and bees that are overloaded with thin nectar.

My method of stocking these cases is as follows: The cover is removed and the case inverted. Blocks are inserted between the blinds and the case to prevent bees from getting in between the two bottoms, from which they might issue on the trip and thus queer the business of shipping bees by post. The case is now weighed and its weight marked on the bottom. Next the case is set on a wide, thin board or even on the ground. The bees are next shaken down beside the case, care being used to see that the queen is started into the case, which is raised at one side on a small block of wood or a small stone. After a little experience one knows how many frames to shake. While the bees are going in, another case is started, and then the first case is again weighed and a few more bees allowed to enter, a few brushed out. I generally allow 18 ounces weight, for the package will shrink about two ounces within twenty-four hours. This method is much better than dumping bees into the case through a tunnel, for most of the old bees fly back to the hive and only young bees, for the most part, remain to crawl into the case.

An even better way to stock these cases is to use temporary boxes into which bees are driven and confined over night. The next morning these bees are dumped on the ground next to the cases and after they have quieted and all taken a flight which desire it, the cases are closed and the bees started on their journey. It is hardly necessary to state that if this last method is used the bees must not be taken and released in the same apiary.

The failure of my case to carry bees successfully to England and also across this continent from Connecticut to California was a great disappointment. But it has not shaken my belief in the case for domestic use. It will carry bees successfully from the South to the North, and will carry them half way the length of the United States. As the pound package industry rarely demands a journey exceeding three days, this case will meet the needs admirably.

If we are to ship bees to England or other distant points we must, I feel sure, seek the solution of the problem not in the case in which the bees are shipped, but in the atmosphere in which the case is kept during the journey. If we could persuade the postal authorities to provide special cars, or if shipments could be made on a sufficient scale to pay for a refrigerator car we could solve the problem. I feel fairly certain that if the atmosphere of the car could be kept at about 70 per cent humidity and about 45 degrees for temperature, bees would be quiet for a long period, possibly even a month or more.

Bottom of cage with cover board removed.

I wish to reiterate that which I have stated with emphasis before. If we are to make the shipment of bees in pound packages successful we must conserve the vitality of the bees. A customer who receives a lot of bees for which he has paid good money, which peter out before they can rear brood to take their places will be a dissatisfied customer. We must see to it that there is no cause for such dissatisfaction.

Connecticut.

(Mr. Latham's package of bees sent to us was received in the fall and was kept in the office as long as the food lasted, which was in the neighborhood of two weeks. We then united the bees with a weak colony. Hardly a dozen bees were dead, and all appeared in fine shape, which speaks well for the cage. Of course, it being fall, the bees were not subjected to excessive heat, but the fact that they came out after nearly three weeks from the time of shipment in such excellent shape goes to show that Mr. Latham's cage has merit.—Editor.)

## Package Bees

By Jay Smith

It is now generally agreed that the combless method of shipping package bees is no longer an experiment, but an established, successful industry. Nevertheless there are two features of this method of shipping bees that for a long time threatened to make this method a failure,namely, loss of bees during transportation and loss of queens in those packages.

When one reviews the past successes, or rather failures, in this line he is sometimes led to wonder how the industry survived at all. I do not mean to cast reflections on the other fellow, for we have had our troubles along with the rest. Bees would die enroute, sometimes when on the road but 24 hours. The reason for this was because the bees had worried themselves to death trying to get out through the wire screen. The remedy for this I shall explain later. Many queens were killed or balled and injured, and the customer would write that the packages were queenless.

The opinion has become prevalent that queens do not stand shipment well in combless packages. Statements of this kind have been made in this Journal. In the March number, 1917, in an excellent article, Mr. A. G. Woodman gives his experience in buying bees from the South. He writes: "One of the greatest troubles was poor queens. The packages, after being in the hive a week or two, would be found queenless, or the queen would not be laying as she should." In the Michigan State Convention held December 8 and 9, it was the opinion of all who had bought package bees that the greatest obstacle in these purchases was the fact that packages arrived with dead queens or that queens were injured and soon superseded. It is my belief that there is no better or safer way to ship queens than in combless packages. The trouble is not in the **shipping** of the queen, but in the **introduction of the queen to the package.** Many do not stop to consider that the queens are mated in nuclei and must be introduced to the package. It has been my experience that it is fully as difficult to introduce a queen to a package of bees as it is to a regular colony in a hive. One practice is to send the queen in a mailing cage fastened to the outside of the cage containing the bees, on the theory that they will become acquainted during the shipment. In this way the burden of introduction is thrown on the purchaser and the loss borne by him. We have found that where bees do not have their own queen loose with them in the shipping cage, they fret and do not stand shipment as well.

One party in Michigan reported having purchased 100 packages from the South and, out of the 100, 60 were queenless and at once developed laying workers, which rendered them almost worthless.

That it may be of some service to others in remedying these defects, is the purpose of this article. The question has frequently arisen in my mind that as we can send queens and a few bees all over the world with success, why can we not do the same with a larger number of bees if the conditions are right? In the ordinary mailing cage the bees are kept mostly in the dark, while in the common wire cloth pound package cage the bees see light, but do not seem to see the wires, and they try to get out, and thus worry themselves to death. Some time ago Gleanings showed a wooden cage with saw kerfs in the sides, which they report as giving perfect satisfaction.

Last season we used the cage as shown in the cut, and it gave perfect results either by parcels post or express. This cage is not difficult to make and is not expensive. The ventilation, being in the bottom and top, cannot be shut off if the cages are placed close together in shipping. Two short wire-cloth cylinders, one in the top and one in the bottom, prevent the bees from crowding toward the openings and shutting off ventilation. The cylinders are not difficult to make. Wire screen is wrapped around a cylindrical piece of wood and forced through the meshes of a square piece of wire screen and the ends bent over. This makes a solid cylinder that will stand shipment well. Short legs on the bottom insure ventilation there and the wooden handle prevents stoppage of ventilation there should the cage be covered up. A thin piece of wood supported by cleats on top of the cage keeps out the light and little light can enter from the bottom. Another feature of this cage is the removable bottom. To get the bees out it is only necessary to remove the screws that hold on the bottom and shake the bees in front of the hive, or they may be shaken into the top of the hive and the cover put on.

The question of water or no water has been discussed at length, but our decision, after trying both side by side, is that the bees without water go as well, if not better, than those supplied with water.

The bees in this light-proof cage hang in a cluster and seem to be as contented as bees in the regular mailing cage. Upon one occasion, while experimenting, I took several packages in the wooden cage and several in the wire cage to the postoffice for shipment. While waiting there, men came at different intervals smoking cigars. The bees in the wire cages would at once begin to roar and would continue to roar and fret for some time after the smoke had cleared away. The bees in the wooden cages never seemed to be disturbed by the slight odor of smoke and remained quietly hanging in a cluster.

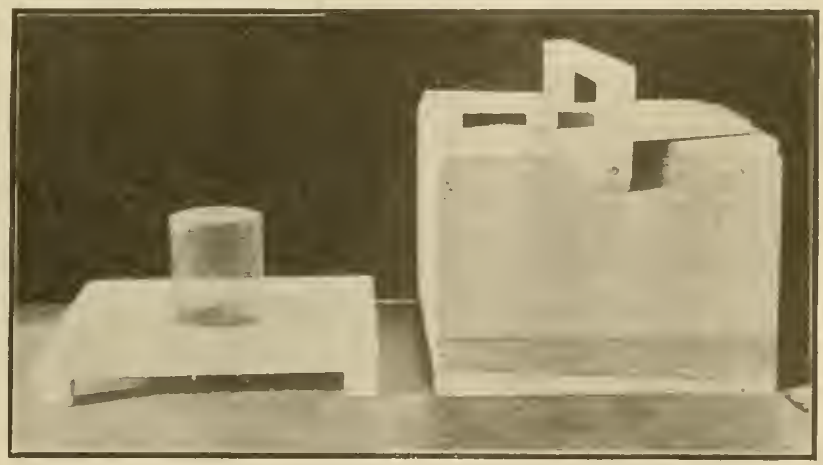
Now let us go back to the subject of introducing the queen to the package. As above stated, for best results, the queen should be at liberty in the package with the bees. By any known method of introducing the queen to the package, there will be a percentage, and usually a large percentage, of loss. Many queens are killed outright. Some are crippled and prove inferior and are soon superseded or may remain at the head of a colony and lose for the beekeeper a crop of honey. Sometimes the bees apparently accept a queen, but as soon as they are placed in a hive and given a frame of brood, they will pounce upon the queen and kill her. In shipping package bees with queen, it is my opinion there is only one safe and fair course to pursue, and that is to introduce the queen to the colony **from which the bees are to be taken** and then, after the queen is laying and safely accepted, she is shaken into the package with the bees she has come to recognize as her own. In such cases the queen is **never** killed or injured and the risk of introduction is borne by the one who sells the package, as it should be.

It seems to me, in all fairness to the one who buys package bees, that the queen should be safely introduced before being shipped and the shipper should not only make good all losses of queens but should also make good any loss to the package which resulted from the loss of the queen. If, for instance, the package arrived queenless and developed laying workers, so as to be worthless, the one who sold the bees should furnish both package of bees and queen. If required to do this, it would insure more careful introduction by those doing pound package business.

Indiana.

### Montana Beekeepers Meet

The beekeepers of Montana held a lively convention at Billings on February 2 and 3. Nearly all present were engaged in honey production on a commercial scale. Montana is one of the best States for honey production. Much of the time was given up to the discussion of the control of foulbrood and the necessity of securing legislation for the protection of the bees.



Smith's wood cage.

AMERICAN BEE JOURNAL

Established by Samuel Wagner in 1861

The oldest Bee Journal in the English language. Consolidated with The National Bee Journal in 1874.

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## THE EDITOR'S VIEWPOINT

### The Bee World

The October number of the Bee World, published at Benson, Oxon, England reached us in December. Its publishers complain of want of support. This should not be. The Bee World is trying to become an international magazine on bees, and we need such a magazine. It is an excellent publication and should not go a-begging. The fault with it, as with many other European periodicals, is the lack of advertising pages. No magazine can live and thrive if it is not supported by advertisers. That is probably why our American magazines succeed. Our cousins in Europe are short on this point.

### Good Samaritan Franco-Belgian Fund

Fifth List.

| | |
|---|---|
| Total of four former lists | $554.35 |
| Harry Lathrop, Bridgeport, Wis. | 1.00 |
| S. D. McAuley, Waterloo, Ia. | .25 |
| D. E. Robbins, Payson, Ill. | 5.00 |
| Chas. F. Baile, Sykesville, Md. | 2.00 |
| Irving E. Long, Marceline, Mo. | 2.00 |
| Chas. E. Hooper, Rome, N. Y. | 1.00 |
| J. D. Yancey, Bay City, Texas | 1.00 |
| W. S. Pangburn, Center Junction, Iowa | 5.00 |
| A. Mottaz, Utica, Ill. | 5.00 |
| L. P. Zimmerman, Louisville, Ky. | 2.00 |
| New Jersey Beekeepers' Ass'n, by E. G. Carr | 25.00 |
| E. G. Brown, Sergeant Bluff, Ia. | 5.00 |
| A. M. Nelson, Inwood, Ia. | 10.00 |
| Total to Feb. 8, 1920 | $618.60 |

Other subscriptions are:

The A. I. Root Co., $300 of supplies at wholesale.

B. J. Cole, Santa Monica, Calif., 12 to 20 queens.

The Apis Club, Benson, Oxon, England, 5 guineas.

The last named subscription was accompanied with a very kind and complimentary letter from our English beekeeping brothers.

The perplexing question is whether to exchange the cash **now** for European exchange, or hold it till it is needed for use. We thought we were doing a wise thing by placing our first subscription of 500 francs in French funds at once. This was worth at the time $55.85. At present the same sum in francs could be purpurchased for $35. The total cash subscription would now bring 8,539 francs. As francs are depreciating, it may be best to hold the funds in American dollars till the purchase of bees is made.

Our subscribers to this fund must bear in mind that their money is more and more welcome to the French and Belgians, since their funds are depreciating. A one dollar subscription now represents between 14 and 15 francs.

We are in receipt of a letter from the beekeeper who was in charge of the rehabilitation of apiaries in the devastated countries and we give a quotation from it. Mr. Graham-Burtt's work has been highly praised by a number of French beekeepers:

Apiary from which colonies were produced for the work of the Mission des Ames in 1919. The wind screen is made of camouflage netting.

"I am very glad to hear of the subscription you are getting up and wish it every success. The need is so great that any amount of money and supplies could be sent; however, you are fully as well informed as myself.

"As regards the work which has been done by the 'Mission des Amis' in this matter; I am at present preparing a report, of which I will send you a copy. The area covered has been, roughly, the northwest part of the Meuse, and the southeast part of Ardennes, and for this area I I have produced and distributed about 170 colonies in frame hives, mostly Dadant-Blatt, and have purchased and distributed about 600 colonies in straw skeps, so that all the beekeepers who have returned have been able to purchase bees to restart their apiaries at from one-third to one-half of their current market value. I have also established a 'Rucher de Reserve,' which I have left in the hands of the 'Societe d'Apiculture,' to enable them to carry on the work of reconstruction; these matters, however, will be given more fully in my report."

GRAHAM-BURTT,
Stroud Road, Gloucester, England.

It will be seen by this letter that only a small area of the devastated regions has been restocked. The Society of Friends will have another man there. We have also secured the services of the noted beekeeper and writer, Mr. J. Crepieux-Jamin, of Rouen, as an additional member of the committee. He is near the western part of the devastated regions and his help will be valuable. Mr. Crepieux-Jamin is a very devoted man, who will give his time without stint to the cause.

We need more cash subscriptions, to buy swarms in the Netherlands and in Southern France. The need is very great.

Take note of the fact that the Society of Friends is not giving away the bees and supplies, but selling them at from one-third to one-half of their actual value. In this way they can help more people, since the funds reach a greater scope. Besides there is no fear of donating bees to people who would not care for them, since a man who buys bees at half price must be a beekeeper. The thing is evidently well-managed and we are very proud of our people. Europe needs help still, and the best proof of it is in the depreciation of their currency. We cannot do too much. In fact, we will never be able to do enough to help make up for the fearful losses inflicted on those provinces.

### Foulbrood Cure by Antiseptics

Since we gave place to a recommendation for antiseptics, in the cure of foulbrood, by a bacteriologist of Nice, on page 233 of our July number, it is but right that we should enter the complaint of two parties who found the cure unsafe, for it killed the bees as well as the disease. The great stumbling block in the way of antiseptics is to find something that will kill bacilli and spare the bees. We have much to learn.

### A Letter From Mexico

Urnapan, December 19, 1919.

We wish you a happy new year. I sent you a nest of small wasps, but could not send the live wasps. I hope you received the nest in good shape. (Yes, it was very interesting.—Editor.)

You will be glad to hear that Mexico is slowly but steadily becoming pacified. Villa is on his last resources and many bandit chiefs have been killed or have surrendered. In this state—Michoacan—they have killed two bandits who were committing depredations in the "hot-lands." If things keep on improving you might be able to pay us a visit safely in a year or so.

While you are suffering under 18 inches of ice, the orange trees are beginning to bloom here and the bees work from daylight till dark. Their supers are beginning to fill. I send you a few violets picked in the courtyard of our factory.

The bee disease of which I have spoken in a previous letter to you is the "disappearing disease." The bees become shiny, beat their wings feebly and drop in the grass. Whenever they are able to discharge the fetid matter which is contained in their abdomens, they get well. The trouble lasts but a few days. I propose to study it next year it it comes again.

Our local factory of cotton tissues, in which I am bookkeeper and assistant manager, employs 200 hands. We manufacture goods only for local consumption.

Accept our best wishes.

P. PROVENSAL.

### Spacing Wires

We call the attention of our readers again to the articles in the February number dealing with the subject of comb foundation and its wiring to secure perfect combs. These articles have called forth considerable criticism and we have had some inquiry as to how the new method of wiring succeeds. The placing of the first two wires very near the top-bar was first suggested by Mr. J. E. Crane, who is known by all as a large and thoroughly reliable beekeeper. Mr. Crane stated that he had had no trouble whatever with sagging since using this method. This method has also been tried in the Dadant apiaries, and with success. Through our suggestion, the Lewis Company, at considerable expense, have readjusted their machinery so that all of their frames will be sent out henceforth under this new plan. We have no doubt but that it will mean many perfect combs if the wires are put in carefully and cemented into the foundation by a good imbedder.

We believe that after sufficient trial by the beekeepers they will demand that their frames come wired in this manner and that within a short time all manufacturers will have changed their methods of wiring to conform to this.

### Death of a Lady Beekeeper of International Fame

We are in receipt of a letter from our old friend, the well-known writer and editor, Thos. Wm. Cowan, of England, informing us of the death, on January 1, of Mrs. Therese Bertrand, widow of the once editor of the Revue Internationale d'Apiculture," of Geneva, Switzerland. Probably few of our readers know of this estimable and talented lady, who for years worked with her husband, both in keeping bees and in editing valuable works on bees.

The daughter of parents who were both famous in literary circles, Mrs. Bertrand labored with zeal for the promotion of progressive beekeeping on the Continent. She was a linguist and often translated articles for publication. The January number of the Bulletin de la Suisse Romande publishes the translation of an article from the American Bee Journal, upon which she must have worked only a few weeks before her death.

Mrs. E. Bertrand.

Mrs. Bertrand was also known for her great heart and her devotedness to the cause of humanity. In 1914, when 72 years old, she volunteered, with 1,200 other Swiss women, to organize the International Red Cross Prisoners' Agency, which located the fate of 83,000 men in the early part of the war, when other services were not yet fully organized.

Those who have the files of American Bee Journal since 1913 can find mention of the Bertrands in October, 1913; May and October, 1914; April, 1915 and March and June, 1917, when Mr. Bertrand died. The leading book of the Bertrands, "Conduite du Rucher" (Management of the Apiary), was translated into seven different languages. It expounds the American systems for European use.

### Harmony

There was a time when bitter words passed between American writers on bees, because they could not agree. There has been a little of this in the British Bee Journal, and a writer in that magazine for January 8 writes:

"What is wrong with beekeeping, or rather with beekeepers? We have had teacup storms about rival antiseptics, skeps, the price of bees, the standard frame, and now legislation, the last of which can only be settled, if we are to take some writers seriously, by burning the editors on a pyre of the Journal.

"What is the matter? Has a long course of acid injections from our little six-legged friends worked in some of our bee masters a change for the worse? Or is it that they have forgotten that conditions vary in nearly every apiary, and that no two beekeepers' requirements can ever be exactly alike?"

These are wise words. Many times people disagree because their experiences are different and they cannot understand that the other fellow simply sees things from another angle. Let us be patient and cheerful with each other. We have seen enough of war. Life is too short to wrangle.

## The Sladen Two-Queen System

By F. W. L. Sladen, Apiarist, Canadian Department of Agriculture

THIS system of management, which was planned to meet the conditions found in the vicinity of Ottawa, Canada, and other northern localities where the swarming season begins about four weeks before the principal honey flow and lasts with great intensity for about ten weeks, described in two of the bee journals last year (Canadian Horticulturist and Beekeeper, October, 1918; American Bee Journal, April, 1919), has been further tested and developed this year.

The principal objects of this system are to reduce the work of preventing swarming and to increase the number of bees raised for working on the clover.

The 1919 experiments show that both these objects have been attained, and that, although the season was less favorable for spring breeding in spring than usual, a somewhat larger crop of honey was secured by the regular colonies, the greatly increased populations having overbalanced a flagging in the work of the bees during the requeening period. Means for reducing this idleness are being studied.

This system is part of a scheme to render practicable and profitable the management of outapiaries, requiring only occasional visits in summer and none in winter, in certain parts of Canada where at present vast quantities of nectar are going to waste for want of bees to gather it.

The queen is caged or removed at the beginning of the honey flow from clover, and eight or nine days later all queen-cells are destroyed except two, one on each side of a division then inserted, or two ripe queen-cells are given. A special portico is fitted over the front of the hive to enable the two queens to mate without meeting. Bees meet in supers above the excluder. From the date the bees are taken from the cellar at Ottawa, about April 12, until the clover flow, which does not begin until about June 22 (average of last five years), the days are comparatively warm and long,* so that two strong colonies are developed from each hive by the time the clover flow begins. Ordinary colonies that have wintered well begin to swarm during the dandelion flow about May 24, but colonies managed by this system are not strong enough to swarm during the dandelion flow. By this means and by the re-queening at the beginning of the clover flow there is avoided the great labor of lifting off every super, examining every comb containing brood and finding and destroying all the queen cells every week during the ten weeks the swarming season lasts, which so far has been found to be the only satisfactory way to prevent swarming at Ottawa.** The two queens raise a much larger force of bees for working on the clover than ordinary colonies containing only one queen. Moreover, without further manipulation, a moderate increase of colonies is obtained and young queens are raised for the next season's work.

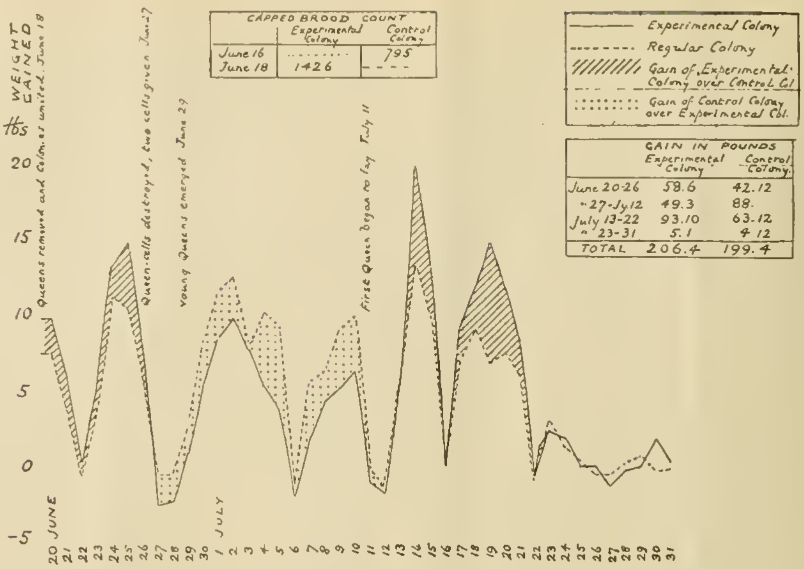

Chart 3. Comparison during clover honeyflow of two hives on scales, one of them (continuous line) containing two half colonies which were dequeened and united, raised two queens. The other (dotted line), an ordinary or control colony, contained fertile queen. The latter colony examined every week, had no active queen-cells after June 10.

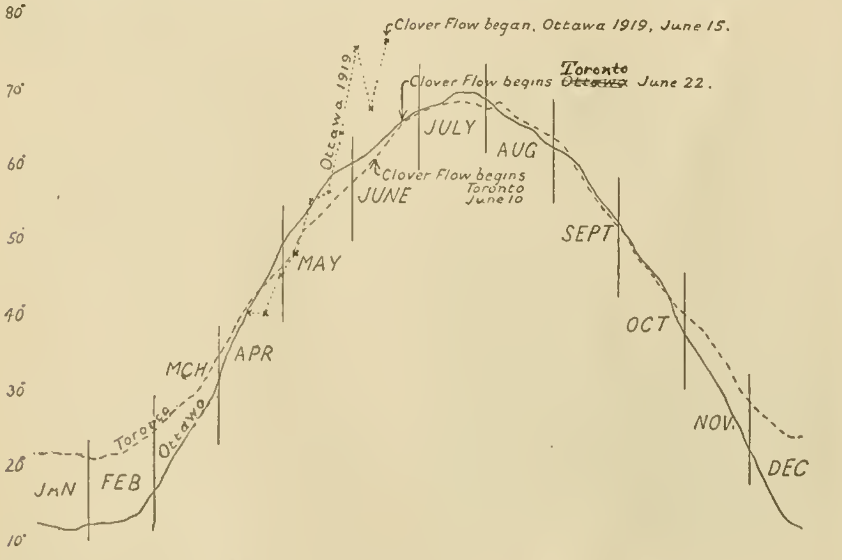

Chart 1. Average weekly values of normal daily temperature, Ottawa and Toronto, and dates clover flow begins.

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* At Ottawa there is a rapid rise in normal daily temperature from 39 degrees on April 12 to 64 degrees on June 22, 25 degrees in 71 days, or about 2½ degrees a week. During the four weeks preceding June 22, the normal daily temperature is 61½ degrees, and the average length of day 926 minutes. At Toronto, during the four weeks preceding June 10, which a correspondent informs me is the date at which the clover usually begins to yield in that neighborhood, the normal daily temperature is only 56 degrees and the average daily length of day 901 minutes. At Ottawa the period of April 23 to June 22 is actually about 2½ degrees warmer than at Toronto (see chart 1), due to the proximity of Toronto to the Great Lakes. But, apart from this, in the north the breeding period preceding the clover flow may be as warm as or warmer than in the south, because it comes later, and the north warms up quickly. Also the further north one goes, the longer is the day during the breeding period, not only because the days are longer for the same date, but because this period is nearer the longest day. At Ottawa the spring warms up so quickly that the bees pass without any waste of energy from the winter's rest to the almost full activity of breeding. This, however, is a continental condition, and does not occur on the Pacific Coast. Owing to the greater difference between day and night temperatures than in the south and on the coasts, the days in spring at Ottawa are actually warmer than the normal temperature indicates. The day temperatures also vary more from day to day, so that there is much less dwindling weather. 45 to 55 degrees. Most of the days are either so warm that the bees fly freely under what would be called in England summer conditions, or they are so cold that they remain in the hives.

These conditions furnish reasons for the important fact that has come out very prominently in these studies that the conditions are more favorable for breeding up for the clover flow in the northern half of the clover belt than in the southern half.

** The great prosperity in the hive induced in the spring and summer by the favorable climatic conditions of the north combined with the intense and long-continued honey flows also helps to explain the intense and long-continued desire to swarm, which is unknown in the south. Giving plenty of ventilation and room in the brood chamber cannot be relied on to prevent swarming in the north, and our experiments with the plan of separating queen and brood have so far proved unsatisfactory.

Twelve hives of bees, each containing two queens, were wintered in the cellar in 1918. Eight of these were in 10-frame hives, and four in 12-frame hives. All wintered well.

Two of the 10-frame hives were taken to a farmer's garden three miles south of the city on May 8, 1919. The bees and queen on the right side of the hive were transferred to separate hives on May 27. (This transference would have been better done ten or fifteen days earlier). The four colonies built up rapidly. On June 24, when all the colonies had eggs or larvæ in queen-cells, showing that they were preparing to swarm, all the queens were removed. On July 3, the queen-cells were destroyed, two being left or given, one on either side of a double wire-cloth division then inserted. No swarming took place and on July 29, when the white honey crop was removed, the brood chambers were examined. One had brood in all stages on both sides of the division; the other three had brood on one side only. The loss of one or two of these queens was probably due to the hives being less than a foot apart. One super was put on each hive for the dark honey crop, which, owing to drought, proved a partial failure, and all the supers were removed, partly filled, on September 23. The yield of one of the original hives was 230 pounds of white honey and 30 pounds of dark honey, total 260 pounds, which was sold at 27 cents for $70.27. The other hive gave 351 pounds of white honey and 52 pounds of dark, total 403 pounds, which was sold for $108.81. In addition to the honey produced, there was an increase of three hives of bees, or 150 per cent. One of these had been built up from nuclei with two of the old queens. Allowing $7 each for the value of the three new hives, and deducting $12.46 for 111 pounds of sugar fed for winter, and $6 for three combs of honey that were given to the nuclei, the average return per hive, spring count, was $90.81. This figure takes no account of the fact that the bees built the combs to hold one-third of the honey produced.

The season for breeding up before the honey flow was not as favorable as usual, being three degrees colder than the average up till May 11, and nine degrees warmer than the average after May 25 (see Chart 1), so that the clover flow started on June 15, a week earlier than usual. At this date, at the home apiary, the half colonies, which had been placed in separate hives on May 22, were beginning to work in the supers.

On June 23 the capped brood count of the two colonies which had developed from a 10-frame hive that had been successfully requeened in July by the system method showed 1544 square inches, against an average of 845 square inches each in the one-queen hives that had wintered with it in the cellar, and 955 in the one-queen hives wintered outside.

On June 18 the queen with a frame of brood and adhering bees was removed from two half colonies that had wintered together in a 10-frame hive The two half colonies were then united together and placed on a weighing machine. An ordinary colony of average strength was placed on another machine, and the daily gain or loss of weight of each was taken at 7 a. m. The result of the comparison is shown in Chart 3. It will be noticed that the system colony made higher daily gains than the regular colony up to the time that the queen-cells were destroyed, and again after one of its young queens began to lay, but that during the intervening period, its work slackened. Several ways of reducing this loss of morale or of shortening its duration were planned for next year. One of the most hopeful is to cage a newly emerged virgin on each side when, or soon after, the old queen is caged or removed, and to liberate the virgins when the cells are destroyed. Another is to keep the old queen in a super next the brood chamber or in the upper half of a double brood chamber for at least eight days.

It was also decided to try to discover some quick and easy method of detecting colonies that are preparing to swarm, and, among other ideas, the following are to be tried:

1. Supporting the brood chamber on a light stand so that the floor

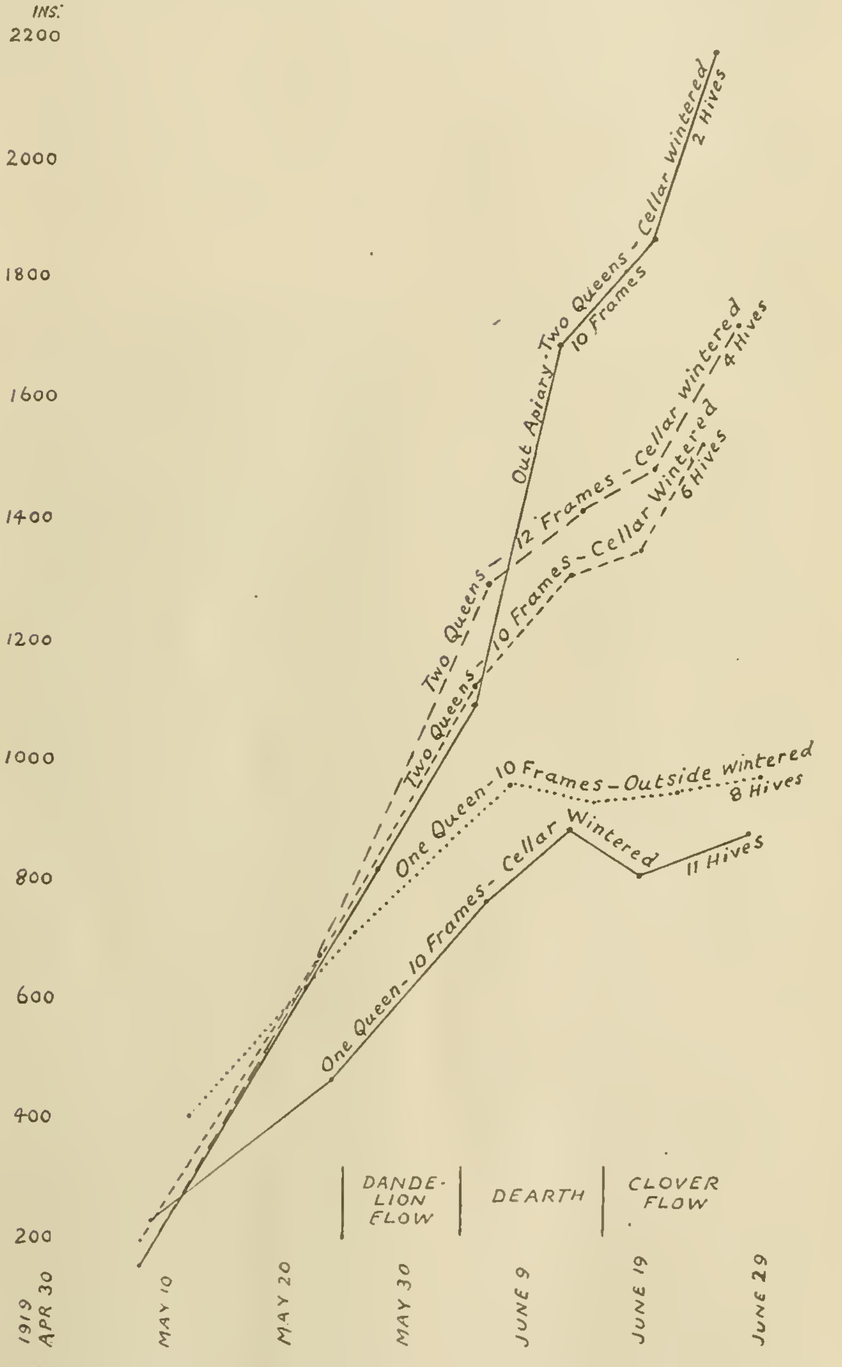


Chart 2. Comparing estimated quantity of brood that had reached capped stage, developed from hives that had started the season with one queen and with two queens. The height and width in inches of the area bounded by cells of capped brood on one side and of each comb were multiplied together. All the queens were given plenty of room to lay.

may be lowered and queen-cells looked for by hand mirror between the bottom-bars of the frames. 2. In a double brood chamber, lifting the back part of the upper half and looking for the queen-cells between the bottom bars. 3. having a slot between two horizontal bars in one of the combs on which cells will be built. By treating only those colonies that are preparing to swarm, the loss of morale will be further reduced and the work of treatment reduced, and spread over a longer time.

Out of eighteen colonies that were requeened at the central apiary by the system method described above, four swarmed or attempted to swarm. It was found, however, that in three of these cases there was a third queen-cell that had been missed when the cells were destroyed, and in the other (attempted only) a drone pupa was found in a third queen-cell. When the white honey crop was removed in early August ten colonies out of the eighteen had young queens and brood on both sides, four on one side only, and four on neither side. In some cases virgins were run in instead of cells left or given, and in four cases the old queen was placed in the top super, with a separate entrance. Out of these four colonies two failed to requeen on either side. It is a question whether the old queen is worth keeping unless she is a particularly good one, except for maintaining morale.

**Honey Produced at the Central Apiary, 1919, Spring Count**

Six 10-frame hives, 2 queens, wintered in cellar, requeened by system, average yield each, 189 pounds.

Eleven 10-frame hives, 1 queen, wintered in cellar, queen-cells destroyed weekly, average yield each, 178 pounds.

Eight 10-frame hives, 1 queen, wintered outside, queen-cells destroyed weekly, average yield each, 167 pounds.

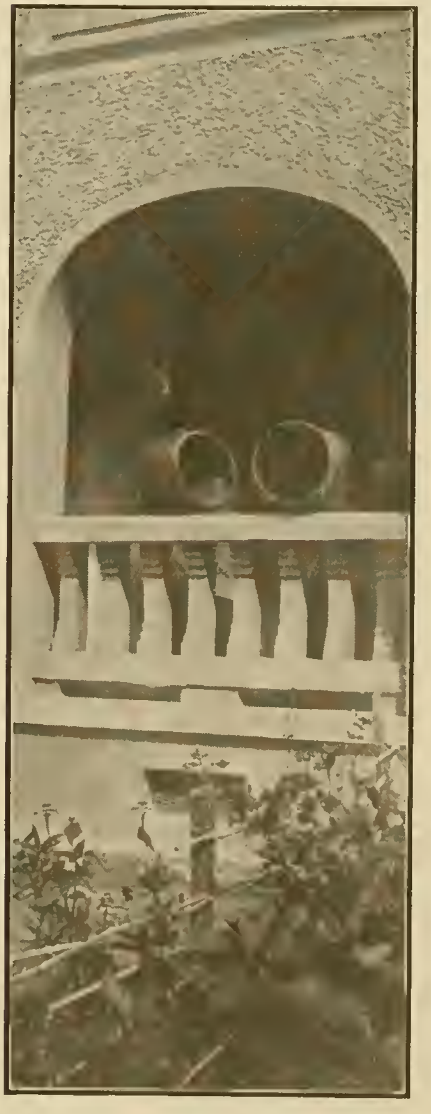
Four 12-frame hives, 2 queens, wintered in cellar, requeened by system, average yield each, 228 pounds.

It is hardly expected that outside wintering will be so satisfactory for hives containing two queens as cellar wintering, but it is being tried in some specially designed 4-colony cases. Another method of wintering that is being tried and seems more hopeful for outapiaries in the north, is to place the colonies in a building (it can be a portable honey-extracting house about 10 feet by 12 feet), surrounded with a thick layer of straw, the windows to be left open to prevent the sun from heating the building in early spring, and screened with cotton to keep out snow and rain. The use of the extracting house as a house-apiary in winter has been found a good plan for a small apiary of regular colonies.

The contention that this two-queen system may not build up the colonies strong enough for the honey flow is met by the following considerations: 1. A hive that has been requeened with two queens in July goes into winter considerably stronger in young bees than one containing only one queen. 2. The colonies in which the queen fails on one side reach full strength for winter and can spare bees or brood in spring to strengthen the weakest of the half colonies. 3. The half colonies can be united at the beginning of the honey flow if necessary. This was done in four out of the six 10-frame hives at the central apiary in 1919. 4. The evidence has shown that when the principal honey flow does not begin until about four weeks after the commencement of the swarming season, as at Ottawa in 1918, the half colonies will build up plenty strong enough for it.

At present the two-queen system is recommended only for localities like Ottawa, that have the last-named condition in average years but some of its developments and modifications are expected to have a wider application. It is expected to produce particularly good results in places where the principal honey flow comes from fireweed or other July sources, and with the larger hives that are now receiving increased attention, the 10-frame Jumbo and the 12-frame Langstroth. It also includes the essential features of the modern treatment of European foulbrood.

(In the April, 1919, American Bee Journal, Mr. Sladen describes this system. The bees on the two sides of the division board meet in the supers through queen excluders until the last super is removed in the fall. From this time on the two divisions are entirely separated.—Ed.)



Chinese basket hives.

## Bees in China

Mr. Frank C. Pellett:

Dear Sir: I am an amateur apiarist with a colony of 20 hives of Chinese bees. The native queen is, however, not as good as the Italian, and I have ordered six Italian queens from California, but they have not been delivered yet. I intend to replace all my Chinese queens with Italians next year.

I enclose two snapshots which may interest you. One shows 4 of my colonies housed in the English ("W. B. C.") hive. The climate here is subtropical in summer and the thermometer ranges from 80 to 106 degrees in the shade; so a shed is absolutely necessary. Our winters are bitterly cold, but I do not move my hives into a cellar—they remain in the open the year around.

All my colonies were purchased from Chinese farmers and I had considerable trouble in obtaining them, as the natives regard bees as "joss pidgin," i. e., symbols of good fortune. They think whenever they sell bees they are selling away their "good luck." They keep bees in baskets generally, suspended against a wall, and one of my pictures shows a couple of these basket hives after I had transferred the colonies. Occasionally bees are housed in wooden tubs or boxes. They know nothing about modern beekeeping methods.

The Chinese bee is the gentlest of its species, rarely using its sting. I never use a smoker, wear a veil or gloves when handling my colonies.

The first book I ever read on beekeeping was the one you wrote, "Productive Beekeeping," one of the Lippincott series. I purchased this in China.

C. G. GOLDING.

## Wiring Frames

In the June issue of the American Bee Journal E. S. Miller gives a method of wiring frames that appealed to me very much, and I found on trial, that he was on the track of a good thing. After a little experimenting, I believe I have evolved an improvement of his method.

I wire the frames in the usual manner, leaving slack in the third wire from the top, so that the wire can be carried up to the center of the top-bar and wound around the head of a five-eighth inch cigar box nail that is driven in at the edge of the large saw kerf or wedge pocket, as the case may be, as Mr. Miller does, and then fasten the end as usual, and then drive in the nail in the top-bar to tighten the wire. Before wrapping the third wire around the nail I take out as much slack as possible in wires No. 1 and 2.

This gives a wire at the bottom to prevent buckling of the foundation. At the same time I obtain the advantage of the points of contact of the crossed wires. This method is nearly as rapid as the usual one, and the imbedding of the foundation can be done with bell transformer on the lighting circuit or with an electric iron circuit.

A. MESERVE.

## Honeydew

By Alex. D. MacGillivray

THE thin, clear, sweetish, glutinous substance extracted in dew-like drops by certain insects is known as honeydew. It is extruded from the rectum of the insect through the anus and is considered as the excretion of the insect. That this excretion is entirely excreta is open to question.

The early students of plants and animals differed decidedly as to the origin of honeydew. The botanists put forth arguments that seemed to show absolutely that this watery substance found upon the upper surface of leaves during the summer was excreted by the plant. The argument was supported by such eminent scientists as Liebig and Hooker. Even some entomologists thought it was excreted by the plant. The arguments of these workers were based upon theoretical considerations and it was impossible for such arguments to overcome conclusions based upon actual observation. For many students of insects, even as early as the time of De Geer (1778), had observed the actual passage of the bubble-like drops from the anal opening of different species of plant lice. The insect origin of honeydew has been confirmed so many times that it is now an accepted fact. The ordinary observer, if he so desires, can readily demonstrate its origin during the summer months by observing some plant lice under a lens giving a slight magnification. The fact must not be overlooked that certain plants do exude substances, but they are always of a very different character, usually thicker and more opaque than honeydew.

The insects that produce honeydew belong to the order Hemiptera. To this order belong the insects which the entomologist designates as bugs, or true bugs. Some of the more common are the bedbug, the stinkbugs, which give the acrid taste to berries, the seventeen-year locust, aphids or plant lice, and scale insects. All the insects included in this order are sucking insects. Their food is either the blood of animals, as with the bedbugs, or the sap of plants, as with the plant lice. Their mouth parts, because of their sucking habits, are greatly changed from those of a caterpillar or a grasshopper, which are for biting. The lower lip is modified into a comparatively long cylindrical projection, the rostrum, which consists of three or four segments. It also has a deep furrow on the upper side. The sides of this furrow are usually adjacent, forming a tube which can be opened on one side or held securely closed at the will of the insect. The two pairs of jaws are modified into four long bristle-like structures. These are extruded through the mouth and through the furrow in the rostrum. The bristle-like mouth parts are longitudinally furrowed and firmly folded together so as to form a slender tube with an extremely fine lumen, much smaller than the lumen in the needle of an ordinary hypodermic syringe. These closely folded bristles, which are about as long as the body, or four or five times its length, are known as the rostralis.

When the insect gets ready to draw up sap, the rostrum is held at right angles to the body and the bark of the plant, and serves as a support for the rostralis, which extends through its central furrow. The free end of the rostralis is sharp and with the support given by the rostrum, the insect is able to puncture the bark of the plant and force the rostralis into the tissues of the plant where there is an abundant supply of sap. Located in the head and associated with the rostralis, there is an efficient pump. This makes it possible, once the insect has its rostralis fixed in the tissues of the plant, to pump the sap into its pharynx, where it is mixed with the excretions from the salivary glands and digestion is begun. The great length of the rostralis in many insects of this group is probably to permit slight movements of the insect without disconnecting it from the plant or breaking off the end of the rostralis in the tissues of the plant.

Bees in English hives in China.

The number of families of Hemiptera, of which the species produce honeydew, is not large, only six.

1. The family Membracidae, the Tree hoppers or Brownie bugs, include only a few species which produce honeydew, and these produce only a small amount. The abdomen is elongated, the posterior portion is tubular and the anus is located at the free end of the tube.

2. The family Cercopidae, the Froghoppers or Spittle insects, includes species all of which produce honeydew. It is said of some of the exotic species that five or six dozen individuals, will produce a quart in an hour and a half. They are the insects that produce the small, frothy or spittle-like masses in the angles of plants. If this mass, which is honeydew mixed with air, is pushed aside, an insect will be found. The froth is produced by the insect keeping its abdomen in motion and mixing small air bubbles with its honeydew as it is excreted.

3. The family Psyllidae, the Jumping plant lice, often produces great quantities of honeydew. Slingerland, in writing of the pear tree Psylla, says: "It literally rained from the trees upon the vegetation beneath; in cultivating the orchard the backs of the horses and the harness often became covered with the sticky substance dropping from the trees. It attracts thousands of ants, bees and wasps, which feed upon it."

4. The family Alcyrodidae, the White flies, are mainly tropical or sub-tropical species, and in these regions produce great quantities of honeydew. The species found in temperate regions, while numerous in species, are rarely numerous in number of individuals, and do not produce a large quantity of honeydew.

5. The family Coccidae, the Scale insects, Mealy bugs, or Coccids, are likewise more abundant in tropical and sub-tropical regions, where the species of certain groups produce enormous quantities of honeydew. It is from this that much of the inferior grades of imported honey are produced. Some of the species of Coccids found in temperate regions produce large quantities of honeydew just prior to or at the time they are producing eggs or giving birth to young. In the Coccidae all the honeydew is produced by the females, young and adults. Such species as the San Jose scale or the oyster shell scale do not produce honeydew. It

is of interest that the manna mentioned in the book of Exodus is the honeydew of a coccid, **Gossyparia mannifera,** which occurs in many parts of Asia Minor. This substance is called "man" by the Arabs. In its natural state it is like honey and is still used for food.

6. The family Aphidae, the Plant lice or Aphids, occur abundantly in tropical and temperate regions and many of its species produce large quantities of honeydew. A very large portion of honeydew produced in temperate climates is the product of Plant lice.

The amount of honeydew produced by different species varies greatly. Some of the subterranean species produce only small quantities, while many of the arboreal species produce a considerable volume. The females of the latter bear on the upper side, near the caudal end of the abdomen, a pair of tubes, the nectaries, from which the early entomologists believed the honeydew was produced. It is only the females in the Coccids and plant lice that produce honeydew—females as adults and as young, but in the other families named, its production is limited to the young.

The insect, after it has attached itself to the host plant, is probably busy a great part of its time in sucking the sap of the plant. This sap passes into the insect's alimentary canal, where it is modified by the secretions with which it is mixed from the salivary glands and the digestive glands of the alimentary canal. In those plant lice excreting a considerable abundance of honeydew, the posterior portion of the rectum is greatly enlarged and swollen. This swollen portion is lined with large active cells. It is quite likely that the honeydew is an excretion elaborated and poured out by these enlarged cells, and not simply the excreta of the insect, as it is generally stated.

(To be continued).

## The Large Hive Idea

By A. F. Bonney

BEEKEEPING is in a state of transition. It has not been many years since every effort was being bent to the production of comb honey, in sections, and, in some States, chunk. Owing to the difficulty of getting bees to go into sections in seasons of light honey flow, and the vast amount of swarming incident to the eight-frame hive, beekeepers began producing more extracted honey, and the war coming on and the demand for honey increasing tremendously, the ten-frame hive, and in many cases two of them, were substituted for the eight-frame, until now the big hive idea is gaining ground very rapidly, the Jumbo and, with others, the long hive.

Owing to the fact that thousands of beekeepers are fully provided with the ten-frame Langstroth hives, they are going to be slow about buying others, either the Jumbo or the Long, and, as I am in that position, I began studying how to bridge the gap, with the following result:

I am now preparing some ten-frame hives by adding a couple of inches to the depth of them. This is a very simple matter, as all one has to do is make a frame of stuff the thickness of the walls of the hive, bore holes about one-eighth of an inch through them edgewise, and fasten them onto the bottom of the hive with long wire nails. The bees will do the rest. If, now, Jumbo frames are put into them I shall gain more than 300 square inches of frame room, 36 inches to each frame, and nine frames, as I long since abandoned the narrow (1⅜ inch) spacing. This is the equivalent of two full Langstroth frames. However, there is more advantage than the mere gain in space, for while I have made an eleven-frame hive of a ten-frame, I have not spread sideways, but down, which is what the bees want, for they will work up and downward indefinitely, while loth to go sideways.

This, however, is but a step towards the large hive which, I firmly believe, is destined to predominate in a very few years, and a great incentive to the change is that we do not have to discard our ten-frame hives, or, for that matter, the eight-frame equipment, for they may all be used as extracting supers.

I have tried thoroughly the use of two ten-frame hives for a brood-chamber. In some cases it worked out all right, but in others the bees would get into the upper hive and refuse to go down. This called for a change, which I generally made by Demareeing, putting one frame of brood below with the queen, which called for work which, in many cases, I hope to avoid by the change in the ten-frame hive.

In this connection, the metal honey comb is, I believe, going to solve the problem of distorted foundation. This, the metal comb, is to be another factor in our transition, even if it reduces the demand for wax and sets the makers of foundation to scratching their heads.

The object of all laws is the greatest good to the greatest number, and all our efforts in beekeeping should have the same idea.

Buck Grove, Iowa.

## Full Sheets of Foundation to Swarms

On page 344, at the bottom of the center column, I wrote: "Never give full sheets of foundation to a swarm." This brings a lot of enquiries. The statement is too sweeping. What I meant to say was: "Never give a swarm all full sheets of foundation." If you do, the bees are likely to break it down with their weight before they work upon it, even if wired. It is advisable to give the swarm a comb or two already built, upon which most of the bees will hang, while the foundation sheets are being worked out. If you have no empty combs, just exchange two sheets of foundation for full combs from the hive that has swarmed, or from some other hive.

In writing this, I am speaking for warm summer climates like that of Illinois. In cool climates it may be all right to hive a swarm on all full sheets. M. G. DADANT.

## Protecting Bees in Winter

A good way to protect bees in winter is to cover the hives with large pasteboard boxes. Fill an empty super about half full of chaff, and place on top of the hive, then put on the regular metal hive cover. Get the boxes about 3 inches larger than the hive. (Those in which bakeries ship bread are just right). Cut out a place in the box to correspond with the entrance to the hive, then fill in all around the hive with straw, not pressed in but loose, letting it settle of itself, and filling again when necessary. No matter how cold it gets, this will protect the hives well, and is very little trouble. The boxes can usually be found at any bakery to which bread is shipped, and cost little if any money. Of course, the bottom must be cut from the box, and just the sides used.

LILLIAN DAVIDSON,
Blue Springs, Neb.

## Beestings and Horses

In the November number of your Journal, on page 384, "New Jersey" enquires what to do if a horse gets badly stung.

Fill up the copper, or whatever vessel the wife uses for boiling the clothes in, and get the water hot as quickly as possible. Then get some blankets, rugs, or anything of a like nature and soak in the water, wringing out the water, and cover the horse with them as hot as the animal can bear them. As fast as they cool keep renewing them with hot ones, and the animal will get instant relief and probably recover.

B. BLACKBOURN,
Sub-Editor Australasian Beekeeper.

## The Bee as a Reformer

By K. G. Devine

"MAC" was a Boston boy, a neglected orphan, who from lack of decent environment and proper training became shiftless and incorrigible. The Children's Court, where he finally landed, decided that he should go to the "Farm," a State institution.

For three years he was the despair of the farm authorities, who labeled him "hopeless." One day he was sent to the State line to bring home some colonies of bees for the new apiary. He brought them home and was badly stung in so doing. The sting of the bees wounded his pride more than it did his flesh, and he determined to subdue the insects.

From that time on he had sole charge of the hives and became so infatuated with his work that he begrudged the time spent in eating and sleeping. "Mac" had never heard of the persistency of the spider which taught Robert Bruce a lesson that saved Scotland, but the persistency, patience and industry of the bee was the regeneration of the boy. He cultivated himself in cultivating the bees and so improved his record that his former detractors praised his industry. He made the farm apiary the best in the Berkshires and when he left was sought after by every beekeeper in the community.

Massachusetts.

### A Soldier's Bees

I am sending you a picture of what is left of my apiary of 50 stands of bees to this date. We are having dry weather, but I think we will have a light honey flow this fall of heartsease. I lost quite a number of my bees in 1917 and 1918 for the reason that I could not take care of them. I was in the U. S. Army from September 19, 1917, till March 11, 1919. I was lucky to be discharged in the spring, so I could put my yard and bees in shape. I have reared quite a number of fine queens this summer for my own use. I have been in the beekeeping business for 9 years and started at the bottom of the ladder. My first investment was $1.50, with which I bought one stand of bees which a farmer could not take care of, and the first crop made 75 pounds, which put me where I am today. I would not take $700 for my yard today, and the bees paid for it.

H. F. CARRILTON.

Illinois.

Apiary of H. F. Carrilton on his return from the army.

## Some Statistics Relative to Beekeeping in Michigan

By B. F. Kindig

IN connection with the work preliminary to the organization of a co-operative Honey Producers' Exchange, it seems desirable to get as comprehensive an idea of the status of beekeeping in the State as possible. With that end in view, 1,600 letters were sent out to good, bad and indifferent beekeepers in nearly every county in the State. The tabulation of the replies received follows:

| Number of colonies per beekeeper | Number of beekeepers in this class | Average number colonies per beekeeper | Total average yield extracted honey | Total average yield of comb honey | Average yield per colony | Per cent comb honey produced | Total number of colonies | Returns per colony yearly | Returns per beekeeper per year |
|---|---|---|---|---|---|---|---|---|---|
| 1 to 9, inc. | 295 | 4.3 | 9,779 | 19,390 | 22.9 | 67% | 1,273 | $ 7.25 | $ 31.62 |
| 10 to 24, inc. | 186 | 16. | 43,836 | 38,804 | 28.5 | 47% | 2.868 | 8.55 | 136.80 |
| 25 to 49, inc. | 132 | 34. | 99,995 | 61,286 | 36. | 35% | 45,535 | 10.25 | 351.39 |
| 50 to 99, inc. | 89 | 65. | 203,125 | 59,355 | 45. | 23% | 5,831 | 12.27 | 797.55 |
| 100 or more | 85 | 200. | 795,827 | 116,888 | 57. | 12% | 15,919 | 15.06 | 3,012 00 |
| Total | 787 | 38.6 | 1,152,562 | 295,723 | 46.6 | 20% | 30,426 | $12.87 | $496.78 |

One of the striking parts of the above table is that it shows that less than 11 per cent of the beekeepers are producing 63 per cent of the honey. Some may feel that this list contains only the more up-to-date beekeepers. It is only fair to say that the list circularized was made up largely from a list of persons who have attended one or more beekeepers' meetings of one form or another. So, the standard of interest is likely somewhat higher than the average for the State. However, there is represented in the above list only one beekeeper having more than 400 colonies, and he has but 500. So, while the proportion of small and indifferent beekeepers may be too small, it must also be remembered that many of the larger ones, for one reason or another, apparently do not care to give data on their business.

It should also be noted that the beekeepers having less than ten colonies and receiving the smallest return per colony are the ones producing the highest per cent of comb honey. The percentage of comb honey gradually falls as the average number of pounds per colony rises and as the total returns per colony increase. Doubtless this should not all be charged to the production of comb honey. It is a well recognized fact that the poorest and the best beekeepers are the producers of comb honey. Usually, the producer of extracted honey is a better beekeeper than the poorest of the comb honey producers, but a poorer producer than the best of the comb honey producers. It is easy to be an extracted honey producer in a mediocre way and still make a fair return on the capital and labor invested.

From a perusal of this table, it appears that professional beekeeping really begins after one has passed the number of 100 colonies. It is significant that the number of beekeepers having from 50 to 100 colonies is only slightly larger than the number having 100 or more. Many of those having from 50 to 100 colonies are in their transitional period. They are undergoing the metamorphosis which will change them from side-liners into professional beekeepers. It seems that the average person must have 50 or more colonies before he gets the vision of the possibilities of beekeeping. When they really get that vision they do not long remain in that class. One of the greatest services that the Extension men and Inspectors can give to the State is to assist the promising beginner to focus his mind on the possibilities of commercial beekeeping. A lot of our beekeepers with less than 50 colonies need to be given a violent shock to wake them up to the fact that beekeeping has as great possibilities as poultry, fruit or general farming.

In the above table the 702 beekeepers having less than 100 colonies produced an average of 43 pounds per colony, while those having over 100 produced an average of 57 pounds per colony. That difference of 14 pounds per colony is a matter of serious importance. Why? It seems to me the whole cause can be ascribed largely to ignorance. I don't mean that these beekeepers are not intelligent persons and successful in other lines, but that they are more or less ignorant of the essentials to good beekeeping. There are many individuals in this class that are just as good beekeepers as the professionals, but the average of knowledge is not so good as the average among the professional beekeepers. Beekeeping has charms, financial, social and intellectual—sufficient to challenge the attention and admiration of our best men. A strong arm and a weak mind are the poorest possible combination in the bee-yard.

The last two columns are of particular interest. As one looks down the column headed "Returns per colony," one can picture in the mind's eye the gradual development of a beekeeper from the nervous, fearful, self-conscious amateur, making but a meager return per colony, to the extensive, successful and too often self-confident professional.

The only moral in this table is by comparison. Size up your business and see whether you are an average beekeeper. But don't be satisfied with being an average. If your territory is at fault, move. If your methods are at fault, change them. If you are not informed, get informed. The most successful men give their business their constant thought and attention.

Michigan.

## To the Rescue of Dr. Miller

By W. S. Pangburn

On page 417 of the American Bee Journal for December, under "Criticisms," by C. E. Fowler, Dr. Miller calls for help on the question as to whether carbon disulphide will kill the egg of the moth. Mr. Fowler claims that it would not.

I am writing this article in behalf of Dr. Miller, for whom I have profound respect, and hope it may be of some interest to other beekeepers as well; but if I might say some little thing that would be of any help to Dr. Miller, I would only be too glad to do it for what I have gleaned from the many helpful articles from his pen.

From my own experience with carbon disulphide, which has been the past 10 years, and in that time fumigating thousands of combs, I do not think Dr. Miller made any mistake when he said that only one treatment was necessary to kill both moth and egg. . I add, if done thoroughly.

In all the time we have used it, and never having had to give any set of combs the second treatment, seems to me at least to prove Dr. Miller was not wrong.

In the past year or two a number of articles have appeared in the bee journals on the subject of treating combs with carbon disulphide, and without exception the claim has been made that two treatments were necessary to do the business, and get both moth and egg, and nearly all the instructions were to pile the bodies to be treated on top of one another several stories high, and place the carbon in a dish on top of the pile, and cover tight. A mighty indefinite set of instructions I would say, especially for a beekeeper who had not used the drug before, and knew little of its action. I do not know that I have seen in any of these articles a definite amount of the drug to be used given, for a certain number of supers or bodies.

In reading the different articles I have often wondered why so many found the second treatment necessary, and we never treated but once, and never a failure in 10 years.

There is only one good reason that we can think of as to why this second treatment has been found necessary, and that is, the job has not been done thoroughly enough, and the dose in most cases has been guessed at.

We will give the method we use in treating out combs; it is different from any I have ever seen given.

First scrape all propolis from top and bottom edges of supers or bodies in order to get a good fit between bodies and retain the deadly gases.

Do not be satisfied with this, but put two thicknesses of newspaper between each set of combs to be treated, which will insure a good tight joint, if your hives are made as they should be.

On top of each set of combs place a cloth about 10 inches square (doubled), and pour a tablespoonful of carbon disulphide on the cloth and cover with newspapers. Then place another body on top, and so on as high as you wish to go.

We believe the success of the treatment lies in confining the gases as long as possible, and giving each set of combs the same strength dose, which cannot be done in piling up bodies 6, 8, or 10 high, with perhaps open joints at each body, as is the case if the edges are not scraped of propolis and made to fit and the carbon disulphide on top of these piles.

The fumes of the drug are very heavy, and will settle to the bottom of the pile quickly, which gives the upper stories a poor chance of being treated as thoroughly as they should, while the bottom ones may, or may not, be treated sufficiently.

In treating combs by this method for 10 years, combs that developed millers could be seen, along with worms from the size that could scarcely be seen with the naked eye, to those almost ready to spin cocoons, also combs wet from the extractor that had as yet shown no signs of moths, that it would hardly be possible that "all eggs were hatched before treatment."

We never think of looking at a set of combs after treating until we wish to use them, if it is not in a year or two, and we have never seen the works of moths in any combs treated. Of course we keep them covered tight after treatment, which is necessary that more millers do not get in and start up another crop.

We took down a pile of combs this season that were drawn in 1913, which were never used or treated since they were piled up, and they were in perfect condition.

Sometimes, some little thing is the turning point to success, or failure.

Iowa.

(Our columns are open for more information on this matter.—Editor.)

(Before.)
Apiary in box hives in British Columbia.—Photo by F. Dundas Todd.

## Excerpt From the Review of Applied Entomology, Nov., 1919, Agric.—Paratyphus in Honey-Bees.

Skandinavisk Veterinar-Tidsskraft, ix, 1919, pp. 25-40-45-60.

"An acute enteritis of bees in the vicinity of Copenhagen has been found to be due to Bacillus paratyphi-alvei, the bees showing symptoms of debility, inability to fly and sometimes diarrhoea, and dying in from 24 hours to a few days. The disease was introduced with purchased infected bees, and in eight beehives, 50 per cent of the bees succumbed in a fortnight. Bacillus, paratyphi-alvei was found in great numbers in the gut of all the infected bees, often almost as a pure culture, and was also found in the blood. It is not identical with the form of B. paratyphi found in man and domestic animals. The feeding of healthy bees and of vespa with pure cultures dissolved in 5 per cent sugar solution showed positive results, but mice, guinea pigs and rats were not susceptible. While the organism is not normally found in healthy bees, it has occurred exceptionally. In these cases the infection has possibly been present in such hives, and it is certain that many cases of paralysis and dysentery recorded in bees have been due to paratyphus.

"This somewhat infectious and malignant disease can be spread (1) by purchase of infected bees and of apparently healthy bees that originate from a hive that sometime previously has been attacked by the disease; (2) through foreign infected males; (3) through beekeepers carrying the infection from attacked apiaries to healthy ones; (4) through infected frames, tools or hives. The author therefore proposes measures controlling the purchase of bees and the prohibition of the importation of foreign bees and queens."—(Supplied by William Hugh, President of the Beekeepers' Association of British Columbia.)

(This is another name for the cause of May disease or paralysis. We are not wanting for names. "Bacillus depilis, bacillus Gaytoni, bacillus paratyphi-alvei"! But what we need worse than names is to know how the trouble originates and how to cure it. It will come by and by.—Editor.)

## Beekeeping in Costa Rica

By W. B. Gehrels

(Continued from February.)

Our second year here proved to be abnormal. It did not rain more than one-third the usual amount. About the first of October the honey flow started, but was followed quickly by a three weeks' rain, and before the honey flow started up again, after the rains ceased, the bees had used up their stores or converted them into brood, so that we had to do some feeding. For feed we bought brown sugar; this is sold in cakes, as it is molded into clay molds at the cane mills. This sugar we boiled, adding some water. When the syrup thickens, cool off and stir; it will grain very fine and when cold, if it is just right, it can be very quickly rubbed into empty combs. This feed excited very little robbing and gave good satisfaction for us. Bees do not seem to be inclined to rob as badly here as in the States.

Towards the middle of November the honey flow opened up better again, but not so good as the previous year. The lack of rain during the winter cut down the flowering of the trees considerably, but by the end of the second year we had increased to 550 colonies and produced 10,000 lbs. of honey. The largest part of this honey was not inferior to the best honeys produced in the States, such as clover, orange or catsclaw. A small part of the honey, that produced from one variety of mangrove, had a slightly salty taste, but was white in color. The bees did not gather any honeydew, or any honey that was dark in color or of a strong flavor, but the largest part of the honey was of a distinctive, different flavor from the honey produced last year. As the largest part of our honey comes in the dry season, the honey is very thick and heavy, so that it will hardly run out of a bottle, but on the other hand, it very seldom candies here on the coast. In the higher altitudes in Costa Rica honey candies, however, much the same as it does in the States.

We have heard of the cheap honeys from the West Indies and Central and South America, which, of course, discount the prices of the article produced down here. There is some ground for this kind of talk, and the cause is nearly always the way the honey is handled, packed and shipped, and again the way it is handled after it is received and finally put on the market in the country where it is consumed. I have sampled bottled honey put up in the two countries that are the most advanced in beekeeping—our own United States and England—that was so much inferior in color and flavor to the honey produced here that it would not admit of comparison. I have bought the bottled honey that I mention, in Panama.

As I am writing this, I have my typewriter on some empty bee hives under the shade of a palm tree, and the bees are coming in clouds over my head heavily loaded with honey from the forest, and the air is full of the sweet-smelling fragrance of ripening honey in the hives.

Beginning with six colonies two years ago, the bees have, with our help, more than made our living for a family of eight members, not figuring the increase to 550 colonies. My good wife and daughters are my helpers; my son is now in the United States attending a mining school.

### HONEY PLANTS

It is only possible to get an incomplete list of the honey-producing plants of Costa Rica, as we have been in the country only two years. Some plants have escaped our notice, and there are undoubtedly many other good honey plants in other parts of the country. I will just give them here as I find them in my memorandum book, without any attempt at listing them alphabetically.

The maranyon produces honey, fruits and nuts; blooms from November till April.

Tamarind—Honey and fruit, April till September.

Aguacate—Honey and fruit; December and January.

Mango—Honey, fruit and pollen; November till April.

Marango—A tree used for fence posts; produces honey; blooms all year round.

Cocoanut and cojol palm bloom all year round; produce honey.

Guava—Fruit and honey; not important; blooms all year.

Oranges and limes—Usually bloom twice a year; produce some honey.

Bananas—Fruit and honey; not important; bloom all year.

Three or four varieties of wild plums; some have very good fruit, all produce some honey; bloom from December till March.

Nispero—Fruit and honey; blooms several times a year.

Coffee—Honey; not important; bloom period too short; April.

Cacao—Honey; not important; April.

Balsa, espavel, cedar, genisero,

(After.)
Apiary of J. H. Alexander, of Ladner, B. C., who bought the Chinaman's bees and transferred them to hives.—Photo by F. Dundas Todd.

guanacaste mora, mahogany and almond are the commercial lumber woods. All produce honey; some are first-class honey yielders. The cedar has no resemblance to the cedar in the States except the lumber. The shape of the tree, the leaves and the blossoms are altogether different from our northern cedar.

The calabash or gourd tree grows everywhere and is an important honey plant. It blooms about six months of the year. The gourds that grow on these trees are very durable and are used by the natives for drinking cups, for dishes and for water containers, and they are also used in making the marimba, the sweet-toned Indian musical instrument. The calabash flowers and fruit come right out of the stem of the tree and large limbs. Seemingly the bark bursts open and the flowers come out.

Bread-fruit trees and the wild fig tree are said to produce honey, but I have not seen bees on them while in bloom; perhaps something else was producing honey at the time that was more to the bees' liking.

Among the good fruits that produce honey, there are two kinds of zapote, the zapotia, the annona, the mamong, the kaki fruit, the loquat and the nancitas. In fact, I find a new fruit every few days that yields honey. The papayas I think I have mentioned before.

The corn is very valuable as a pollen yielder. There seems to be a dearth of pollen here sometimes.

The mangrove, of which there are more than a dozen varieties, bloom the greater part of the year. Some yield considerable honey.

Most of the plants and trees of Costa Rica, except the grasses and some garden vegetables, yield honey. Among the vegetables the chayote produces honey and pollen. The gherkin, or wild cucumber, produces considerable honey during the rainy season. Mesquite, catsclaw and wild cotton also give us some honey.

A peculiar thing — flowers will often continue secreting honey after they have fallen to the ground, and bees will continue to work on them; children sometimes get stung by stepping on them. I have noticed this with the flowers from the calabash, the marango and the pampaya.

Costa Rica.

## Southern Beekeepers Affected by Wisconsin Apiary Law

The attention of the beekeepers of Alabama and several other Southern States which do not provide for apiary inspection is called to the new Wisconsin law which went into effect last July.

Under this statute beekeepers and transportation companies are prohibited from accepting for delivery in Wisconsin any bees, comb, or used beekeeping appliances without a permit from the Wisconsin Inspector of Apiaries, or an inspection certificate from an official Inspector of the State of origin attached to each package, crate or bundle containing the same.

It appears to be customary for the Alabama dealers, at least, to attach affidavits to their pound packages, stating that the honey used in making the candy has been diluted and boiled. Our experience has been that the ordinary boiling is insufficient to sterilize honey, and that foulbrood sometimes develops as a result of the introduction of bees in pound packages, unless they come from an apiary free from disease.

It is now too late, of course, to provide for inspection in a State in which no arrangements of that kind have been made. Consequently, it will be necessary for all dealers who are unable to furnish an inspection certificate to secure a permit from the State Entomologist of Wisconsin for this purpose. A copy of this permit may then be attached to each pound package, and a list of all the customers of the permittee filed with the State Entomologist. It is understood that where bee diseases are apparently introduced in pound packages, permits will probably be refused in future years to the apiaries from which the bees were received.

All shipments should also be accompanied by the affidavit form now used. Applications for the needed permits are to be made to S. B. Fracker, Acting State Entomologist, Madison, Wis.

## Jumbo Hives in Dadant Style

By F. Dundas Todd

TALKING to Mr. C. P. Dadant at the meeting of the Chicago and Northwestern Beekeepers Association in the year 1908, I remarked that some day I was going to try out a Dadant or Quinby hive. Very earnestly Mr. Dadant remarked: "Mr. Todd, we never urge anybody to use our style of hive, but I will assure you of one thing, that if you ever do try it, you will never regret so doing."

At that time I had on hand a complete equipment for about 50 shallow divisible hives, and no inducement to add to the number, nor did I have any further need for nine years, so my intention was for a long time unfilled. As I had so many shallow frames on hand, and a four-frame extractor with twelve-inch baskets, I felt I could not afford to follow exactly the dimensions of the Dadant hive, so I began by compromising on the ten-frame Jumbo, but following closely the general design of the Dadant. Instead of starting with one, I made five, getting them all filled the first season. In one of my letters to Mr. Dadant I happened to mention what I was doing, and he urged me to let him know my results.

The first season's wintering of these hives was just average with my others, but I considered I had better say nothing until I had further experience. One thing however that I did appreciate very much was the greater ease in handling the colony. With our long building up season, four months , we get the kind of colonies most beekeepers dream about, but very seldom see. At the beginning of May a good beekeeper frequently has a ten-frame Langstroth packed with bees, so a second story is in order, when a good queen will do a land office business. In 1919 we had a rather cool, wet April, yet, before the end of the month, several men stopped me on the street to tell me how well their bees were doing. One man with six colonies said his best hive had fourteen solid combs of brood, his poorest, six. Nine frames of brood are not uncommon. Our honey flow is not due until July, so think of the backbreaking labor involved in examining regularly these double deckers for two months. As a bee inspector I know what it means. With a Dadant hive big enough, the brood chamber is all in one story, so the cover is the heaviest thing to lift until the honey flow is on. By the way thirteen frame Langstroths have been tried by several beekeepers in British Columbia, and discarded.

So in 1918 I had ready a complete equipment for 20 more Dadant style hives with eleven Jumbo frames,, spaced as were the previous five, one and a half inches, I did not like the Dadant cap, but I followed the idea by using the "riser" so favored by British Beekeepers to protect the super. My cover is a telescope with a two inch rim. In general appearance my hives just look like a Dadant. The season proved to be cold and dry so that from the middle of May until well on in July the bees lived from hand to mouth. When the season closed I had only eighteen Dadants in all, many of them without the full complement of combs and short of stores. To remedy the latter trouble I gave them shallow supers of honey, and the net result was that only two colonies were wintered in the brood chamber alone. It was not a fair deal for the new hive, but it was the best I could do.

The winter was mild but wet, typical Pacific Coast weather north of San Francisco. Bees wintered well where stores were plentiful. I left 50 pounds to the hive, but a rollicking party of young porkers got access to the orchard where my apiary is located, found the most succulent morsels right in front of the hives and jarred these considerably, so in the spring I found stores lower than usual. April was cold and wet, and I was therefore unable to make my usual spring inventory of brood area and weight of honey, so my notebook has merely such words as, strong, medium, weak, plenty, short, no stores, just such facts as one could gain from a hurried examination above the frames.

Having completed the annual spring tabular statement as to queens from different breeders, also according to their age, hives and systems of packing, so as to find the value of the whole series of experiments on wintering, I have been conducting for years to find the best system for a region where damp is the most important factor, I worked out quite a series of percentages, and feel I can begin to comply with Mr. Dadant's request for the results of the venture.

First, I group all the colonies in Dadant hives under the three headings of strong, medium and weak, and do the same for the other style of hive, the shallow divisible, and I find that 72 per cent in the Dadant hives are strong, while in the others only 55 per cent. On the face of it, this looks first rate, but I have four different lines of queens in my yard, and a little more than half of last year's raising. So I have to work out a few more percentages. For example, one strain of queens, which I will call A, has 66 per cent strong in the whole yard, but in the Dadant hive there are 75 per cent of them under the same heading. Strain B, for which I paid a pretty good price on account of much booming, has 33 per cent strong in the whole yard, and in Dadant hives. Funny queens these, slow in building up, not inclined to swarm, giving a crop equal to the average of the yard. Stock C is 66 per cent strong over the yard, but 80 per cent in Dadant hives, while strain D is 70 per cent strong in the apiary and 80 per cent in Dadant hives. Queens of all four strains raised in 1918 are 58 per cent strong over the yard, but 83 per cent strong in Dadant hives. Older queens are 70 per cent strong in the yard, and 80 per cent strong in Dadant hives. I take the strains individually as found in Dadant and the other style of hives, and find the average at least 25 per cent in favor of the Dadants. The two colonies housed in typical Dadant style, that is in a brood-chamber alone with a sack of dry moss in a protecting case above, have in the last week of April five solid combs of brood, just as fine as I ever saw.

The above was written in May, when I intended to convert 30 more of my colonies into this style of hive, hoping to find the task much easier, seeing I had so many drawn combs, and would be able to help out with frames of sealed brood occasionally. Now in November, I have to report that in the region where my apiary is located the season has been cold and dry, as in 1918. My colonies, as a whole, were very strong by the end of May, but from that date until the honeyflow started in the middle of July, they practically lived from hand to mouth. The best I could do was to work over 19 more of my colonies into 11-frame Jumbo hives. My honey crop averaged 40 pounds to the hive, spring count. On the first extracting when the supers were stacked up in the honey house, I was rather surprised to find that fifteen of them came from the original eighteen original Jumbo colonies, and five from the nineteen shallow-frame hives. I have thought much as to the mechanical why, but have failed to get an answer satisfying to myself. The most probable to my mind is the protection given the super by the outside telescope case.

I am now more than satisfied with the great ease in working this style of hive, and I think I have run the gamut through Gallups, 8-frame Langstroth, 10-frame Langstroth, Long idea with 17 frames (by the way it is rather good), Simmons' bureau hive and 8-frame shallows. Many theorists denounce the shallow hive, but I have always liked it in preference to 10-frame Langstroths. As a rule it lagged in early spring behind a hive with Langstroth frames, but whenever it had six frames of brood I transposed the bottom half with the upper, then there was something doing.

For extracting I use the shallow frame, prefer it much to the ordinary Langstroth, all this after using it for eleven years. When I started to learn golf I chose a heavy club so that the weight of the head would drive the ball; later I learned that a light club over which I had perfect control always gave longer distances and better line. In the field of carpentry my first hammer weighed a pound and a half; now for ordinary bench work my choice is a 14 or 16 ounce hammer. In beekeeping I am applying the same principle. In examining a brood-chamber in my own apiary my heaviest lift is now 8 or 10 pounds, that is a full Jumbo frame; when extracting I handle about 5 pounds, and the width of the frame is such that the uncapping·knife slices off the cappings very easily. I find I can uncap about 50 frames an hour without rushing, and I am no speed artist. With eight shallow frames in four 12-inch baskets I extract the equivalent of five ordinary frames, so I gain a little there. In my own apiary from now on my only heavy lifts will be the supers of honey in July and August, so I have gained a lot.

When I bought my 6½x8½ camera over thirty years ago, Dr. Thompson, then aged 65, said, "When I was your age nothing less than a 12x15 was good enough for me. It was in the wet plate days, so I had to take with me large bottles of chemicals and baths, and you can picture to yourself how I looked trundling a well-laden wheelbarrow all over the country side seeking for new scenes to photograph. Now I am content with a camera for 3¼x4¼ plates."

My sympathy is now with Dr. Thompson. Then I could not appreciate his point of view, now I understand. Just ask any man who owns a camera weighing over 2 pounds how often he **carries** it a few miles from home and you will find it is very seldom. He is the victim of his tools.

B. C.

## Well-Known Beeman Dies

On December 29, 1919, occurred the death of Ernest J. Beeker, of Rushville, N. Y. Mr. Beeker was one of the oldest and most successful beekeepers hereabouts. We were always glad to have him with us at our meetings. He was a well posted man in apiculture when I was learning my ABC's about 45 years ago. I well remember the hive I saw in his yard at that time—brood-chamber in the center and 4-lb. glazed boxes piled all around this. The principle of the hive was: the boxes were started **over** the brood-chamber, and while partly filled were moved to the side, where empty ones again were placed on top. Mr. B's success with this plan was a wonder to me at that time. However, he adopted the 1-lb. section cases soon after and with them the Langstroth hive. Mr. Beeker was highly esteemed by the beekeeping fraternity here and we shall all miss him.

F. GREINER,

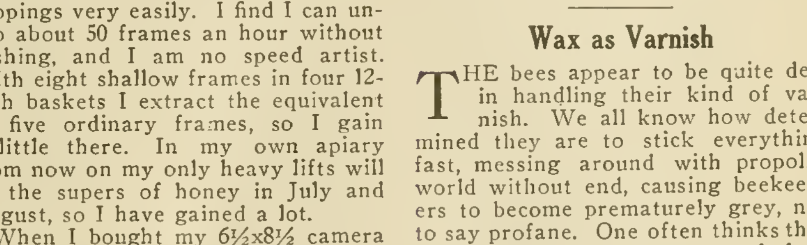
Naples, N. Y.

## Wax as Varnish

THE bees appear to be quite deft in handling their kind of varnish. We all know how determined they are to stick everything fast, messing around with propolis, world without end, causing beekeepers to become prematurely grey, not to say profane. One often thinks that they might make better use of their time. But who knows? Perhaps it was here that men got the germ of the idea for varnish, which was later to blossom forth as that divine confection used by the old violin makers of Cremona to embellish and preserve their instruments.

In modern formulae for varnish, wax does not appear to be mentioned. Recipes are found, though, for wax polishes and wax stains. Here is one for wax polish:

Melt 8 ounces of beeswax with 8 ounces of spirits of turpentine; allow



A Massachusetts house-apiary

to cool, and then add 2 ounces of alcohol.

A polish for floors is made as follows:

Melt together 16 ounces of beeswax, 1 ounce Venetian turpentine and 16 ounces spirits of turpentine; allow to cool and apply. After one-half hour, polish with woolen cloth or weighted floor brush.

A polish for tool handles can be made by melting together equal parts of linseed oil, spirits turpentine and beeswax. Apply this mixture hot with a rag. The friction of the hand in using the tool gives the handle a smooth polish that is a great comfort to the user.

Wax stains are made from a mixture of beeswax and turpentine, colored with oil colors such as vandyke brown, burnt and raw sienna, burnt and raw umber, etc. The principal requirement is that the color be semi-transparent in order not to hide too much the grain of the wood.

Wax is thought by some to have been an ingredient of the so-called lost Cremona varnish mentioned above, which was developed by the violin makers of Italy, about the year 1550, and used by them until 1750, when it mysteriously disappeared. Its loss has been much lamented by the musical world, for they are convinced that with it was lost the Italian tone of the violin which is so much sought for by virtuosi of that instrument.

Occasionally a ray of light breaks the gloom of the fiddle fans. One Victor Grivel announced several years ago, the title of his book as: "Vernis des anciens luthiers d' Italie, perdu depuis le milieu du XVIII siecle, retrouve par V. Grivel." (Varnish of the old violin makers of Italy, lost since the middle of the 18th century, rediscovered by V. Grivel). The only comment that can now be made is that the world was unconvinced. The author has been gathered to his fathers, leaving no record of his varnish formula behind him.

This is only one instance of a number of similar disappointments. The gloom of the would-be Cremona varnisher has now become Stygian. The outstanding fact is that "like the snow upon the desert's dusty face." Cremona varnish has gone where the woodbine twineth.

Some day her sad tale will be taken up by a skillful movie scenario artist and be played to crowded and humid houses from one end of this broad land to the other. In the meantime if any reader of the Journal has her concealed about his premises, he should stand and deliver, that the world may read without regret.

"The instrument upon which he played
Was in Cremona's workshop made,
By a great master of the past,
Ere yet was lost the art divine.
Fashioned of maple and of pine,
That in Tyrolean forests vast
Had rocked and wrestled with the blast;
Exquisite was it in design,
Perfect in each minutest part,
A marvel of the lutist's art;
And in the hollow chamber thus
The maker from whose hands it came
Had written his unrivalled name—
'Antonio Stradivarius.'"

—Longfellow.
"Tales of a Wayside Inn."

Maryland.

## How to Convert L. Frames Occupied by the Bees Into Deep Frames

By Brother Alphonse Veith

IT makes an unsatisfactory job to transfer combs from a small frame to a larger one. Neither am I in favor of melting nice brood-combs, as suggested in the December number of the American Bee Journal in "Criticisms." In these days of high prices we cannot afford to destroy valuable brood-combs and compel the bees to build new ones with much labor and the consumption of about 10 to 15 pounds of honey for each pound of wax they produce. Add to this the price of new frames and foundation comb, which is together, per 100, in the neighborhood of $30.

The writer has made a start with the Jumbo hive, and in doing so the frames with combs occupied by the bees are used. The standard Langstroth frames are changed into deep frames simply by putting on a new bottom-bar with short end-bars which are fastened with crating staples to the Langstroth frame. Afterwards the bottom-bar of the Langstroth frame is cut with the aid of a narrow saw and removed. The empty space is now filled either with drawn-out comb or foundation. I have shown a specimen of this to an expert beekeeper, and he expressed his approval.

Indiana.

## Two Queens in One Colony---Foulbrood, Etc.

By H. Brenner

WE find mentioned in bee books that in exceptional cases two queens worked peacefully on one frame, and that these queens are mother and daughter. In the apiary of Leonard Moss, Jr., in Seguin, Guadalupe County, Texas, in demonstrating to some beekeepers my latest method of queen rearing, we found two queens and supersedure cells in a colony, and as I investigated this matter in the tropics, I want to send in the results of my investigation, as it may interest the readers. In uniting hundreds of colonies for the winter flow last year in San Domingo, I saw in January two colonies with two queens each, and not related, the more so as one colony had a black and an Italian queen. One of these colonies had two supersedure cells. I examined the queens in these two colonies and found three of the queens crippled. In the Moss apiary here one of the queens had a torn wing and the other a crippled leg. In all these three colonies I found eggs and brood, but the colonies not up to date like the others. After the above investigation I came to the conclusion that the queens will generally try to kill each other, and whenever we find two queens in one brood nest they did fight but could not inflict the death wound. Both of these queens are in consequence of this fight either crippled or worn out and not fit for work, as the supersedure cells or inferior condition of the colonies shows.

In uniting colonies in the tropics I marked for experiment about two dozen queens and I always found the old queen missing and the young one remaining.

A friend of mine asked me to look at his apiary in southwest Texas, which did not bring in honey as they ought to have done. I found that the colonies had too many supers with foundation for the light honey flow and condition of the colonies. I took the supers off and left only one per colony. I found in one apiary two colonies badly infected with foulbrood, but fairly strong in bees and apparently a good queen reigning. These two colonies I left with only one super like the others. Other colonies that the apiary hands had marked "foulbrood" I did not bother, for fear of robbing. In about 12 days, when I revisited the apiary to put the second super on, I found in these two colonies not a sign of foulbrood, the brood nest in excellent condition and nearly ready for another super.

I have been asked several times here in southwest Texas by good apiarists if honey extracted from foulbrood colonies contained foulbrood germs or bacteria. I always took it for granted that it did, and for want of opportunity have never experimented with it. I suggest to isolate about six sound colonies in good condition, take all stores away and feed in starvation time honey taken from foulbrood colonies and watch the results.

Texas.

## Soldering

Will you allow me to add a word or two to Doctor Bonney's article on the above in the American Bee Journal for August? If after the raw muriatic acid is killed with zinc a tablespoonful is added to half a pint of water it will be found a very excellent cleaning solution for the iron. It is quicker and better to dip it into this than wipe it with a cloth. I have never tried plugging small leaks with wax and fat, but will do so. When the tin is full of honey these leaks are very difficult to solder, as the honey oozes out and prevents the solder from taking. The best method is to tip the tin in such a way that the honey will fall away from the hole.

In mending small holes in enamelware it is best to work around the hole with the small blade of a pocketknife until the edges are bright. Break the enamel away and get down to the iron. Plug the hole with a bright, flat-head nail which will just fit the hole, having the head inside. Solder from the outside with a good hot iron and thoroughly "sweat" the solder onto the nail head inside the vessel. This is much better than just filling the hole with solder. Cut off the protruding part of the nail and job is done. For larger holes the same method can be employed, only use a copper rivet with the head inside and washer out. If the solder is well "sweated" with this it will last as long as the pot. Cut off the protruding part of the rivet.

MAJOR SHALLARD.
New South Wales.

# DR. MILLER'S ANSWERS

Answered by the Editor during the illness of Dr. Miller.

### Honeydew

I have been awaiting to see or learn something out of the Journal in regard to honeydew. My bees have been dying off gradually all winter; my neighbor beekeeper has lost half of his colonies up to date.. I am informed if bees carry the honeydew into their brood-nest and live on it, it kills them. If any of our beekeepers know of any remedy to overcome this I would like to hear from them.

SUBSCRIBER.

Answer.—I know of no remedy but the removal of the honeydew and replacing of it with good honey or sugar syrup. If it is not too late, you might feed the colonies with good sugar syrup made by diluting 2 pounds of sugar with a pound of water and feeding it to them warm, in a feeder, right over the combs. They will use that first and will leave the honeydew in the combs. Most of the bee books advise the removal of honeydew in the fall.

### Moving Bees—Transferring

1. As I have a hive of bees that is about 80 rods from the house, which I would like to have brought closer, I would like to know how and when is the best time to move them, and how to do with them after moving, so as to not lose any bees.

2. I would also like to know when is the best time to transfer from a box hive to a movable-frame hive, and which do you think is the best method of doing it

ILLINOIS.

Answers.—1. Wait till the warm days of spring. Then close the hive in the evening. In the morning drum them vigorously so as to frighten them. Then carry them to the new spot and place a slanting board over the entrance so as to compel them to take notice of the change of location. Usually when they have been very much disturbed they take note of their place, as does a new swarm. But some bees among the oldest often insist on returning to the old spot.

2. The modern way to transfer is to wait till the beginning of the honey crop, drive the bees and queen into a box and hive them into the new hive just like a swarm, placing the old hive on top of their new home or at the rear, for 21 days, or until all the brood hatches. The more thorough way is to transfer all the brood combs also and destroy the old hive. For the latter method, see the text books: "First Lessons in Beekeeping," or "Langstroth." It would take more space than can be spared in the Journal.

### Fermented Honey in Cells

I noticed last August, when extracting honey, that the sealed honey from at least one colony was fermenting. December 22 I extracted the honey taken from a number of hives after the flow stopped and I found practically every cell in the super from hive No. 43 was fermented and would throw out say 6 to 12 small air bubbles from each cell as soon as uncapped. The cappings slipped from the knife as if they were greased and the honey was very thin, though it was sealed. It is in an open jar and has become decidedly sour. I put a bucket of it in a hot water bath; the water boiled a few minutes, then all was set on the back of the stove. When cold this honey had little or no foam at top, but looks and tastes like it had a big lot of pollen in it.

1. Will this colony winter well?

2. Will its honey ferment again next season? I know that one colony had this trouble last year (1918), too, perhaps this one.

3. Do you want some of this honey and some of the comb it was in for examination?

4. Should I transfer them into a clean hive next summer, or requeen? or both?

I got a poor quality of honeydew in June and a good crop from heartsease later, over 8,000 pounds in all.

MISSOURI.

Answers.—1. It is difficult to guess, but my guess would be that the colony would suffer very much, if its honey is all fermented as described.

2. If the conditions are as mentioned on page 422 of December last, the honey of next season would probably ferment again if stored in those cells. . It seems as if the germs of fermentation remain. At least that was the experience of Mr. Kenyon in similar circumstances.

3. We will be glad to examine a sample of it.

4. If the trouble is bad, it might be well to put the colony on new combs next year. Requeening seems absolutely unnecessary, and, in fact, useless. The queen is not at fault.

### Division—Rearing Queens—Killing Drones

1. Can I split my colonies in half, putting 4 frames full of foundation, at the beginning of the season, in another hive, and have good swarms?

2. Is it necessary to buy queens, or will they rear their own queens?

3. I had lots of drones in my hives, but I put on drone traps and killed them all. Will the bees eventually rear a young queen, when the old one is worthless?

MISSOURI.

Answers.—1. Yes, you can split your colonies in the way you suggest, but you must watch them so as to make sure that each side has all it needs. If you don't seek and find the queen, you must be sure and have young larvæ less than 3 days old in each division, so they can raise a queen.

2. They will rear a queen, if you do as above suggested. But if you buy queens to use when you divide, it will be better. You must make sure in what half the queen is.

3. Your way of killing drones is the most expensive way. Yes, the bees will usually rear a new queen when the old one is too old. You need to get a bee book of some kind and read it. It will explain many things to you that can't be answered in this department.

### Miscellaneous Questions

1. Next year I want to use a shallow extracting super and comb-honey super on the same hive. The sections will contain full sheets and the extracting super will contain only narrow strips for chunk honey. Now which super shall I place on the top if I put them both on at the same time?

2. You dequeen for ten days and have the same honey and it cures the colony of European foulbrood, and yet if you would feed any of that honey to a healthy colony they would catch the disease. Please explain why one colony can eat it and the other can't.

3. If one should buy a pound of bees with queen and afterwards change places of the hives between it and a strong colony, will the returning field bees kill the queen, or will they take hold and help build up the colony?

4. Criticise the following for transferring from a box hive to a movable frame hive. Just wait until they swarm. The box has no bottom. Turn it bottom side up and put a queen excluder over it. Hive the swarm and place it (minus bottom) on top of excluder. stopping up all entrances except through the hive( of course this will have an opening). At the end of nine days the brood below will require no more attention, so remove the excluder and put on an escape board, bottom upwards, so the bees can get up but not down. If the virgin attempts to swarm she can be caught in an Alley trap. Would there be any honey remaining in the box when the brood all emerged?

5. If a swarm emerges from a hive, which we will call A, and a couple of days later a swarm comes from another part of the yard and is hived in A, will the new swarm tear down the cells already started in A?

6. How can a person put an observation hive in a window and not mutilate the window?

7. If one puts a tight division board in the middle of an 8-frame hive and has on each side a full 4-frame nucleus, will the bees work as well in the super as eight frames under one queen?

8. Would one need to use any precaution in uniting them except to remove the division board?

9. Will bees in a 10-frame Jumbo hive lay up as much comb honey as in a 10-frame Langstroth size?

PENNSYLVANIA.

Answers.—1. Put the extracting super on first. As soon as the bees get to work well in it, raise it up and put the comb honey super under it. If you insist on putting them both on at the same time, put the comb honey super at the bottom.

2. Are you not getting the two kinds of foulbrood mixed? It is with American foulbrood that the honey is dangerous. If there were germs of European foulbrood in the honey, then, of course, we would have to starve the bees also. But it does not seem to appear necessary.

3. They will not give any trouble if the crop is on. If there was no honey in the field they might cause trouble, but not positively.

4. The success of this will depend in a measure upon the season. It might do in a warm summer. As to whether there will be any honey left in the lower box, depends upon how much there was when it was turned over, and also how large a crop has been harvested in the meantime. It would be a puzzle to answer it one way or the other.

5. It may and it may not. In a crowding season the cells would probably be preserved.

6. Raise the window enough for a bee passage and put a block of wood in the aperture, on each side of the bee passage. An opening an inch wide is sufficient for an observation hive.

7. Probably they will. Have never tried it; try it yourself.

8. Not if there is a honey crop. At other times they should be thoroughly smoked before removing the board, and it would be better to kill one of the queens the day before.

9. That depends on the strength of the colony. But with colonies of equal strength, as there is more room for honey in the Jumbo, they may put more honey in the supers of the Langstroth. I judge that is what you want to know, though you don't exactly say it.

### Transferring—Cross Bees—Large Hives

1. I have 12 hives, 11 of which are in standard dovetailed hives, and the other in a box-hive. I would like to know your best way to transfer the bees of the box hive into a standard 10-frame dovetailed hive. How could I transfer the hive? I do not wish to save the old combs and place them in the new frames, as some do when they transfer. I

am to furnish this new hive with full sheets of foundation.

2. I would like to know what causes my bees to get angry each time I open a hive and apply a little smoke. Do all bees do this?

3. Are 8-frame hives as good as 10-frame hives when running for comb honey? Do they winter as well as the 10-frame?

4. Are the 10-frame Jumbo hives better for wintering than the 10-frame dovetailed? Are the Jumbo better than the 10-frame standard hive when running for extracted honey?

5. Can you give any information as to where I can get any 12-frame dovetailed or other hives?

6. I would like to know which way is best to arrange the hives. Arrange them all on separate stands, or all on one stand?

ILLINOIS.

Answers.—1. The best time to transfer bees is when they are making some honey. You must, of course, save the brood, whether you save any of the old combs or not. At a time when they are beginning to make honey, say about June 1, smoke your box hive, then invert it, placing another hive or box of about the same size on top of it, mouth to mouth. Put the movable frame hive on the old stand. Drive the bees out of your old hive by drumming it with a club for a few minutes. Make sure the queen goes with the bees. She usually does when the bulk of the bees go. Then throw your driven bees in front of the movable frame hive, just as if they were a natural swarm. After that you can either fix the old hive on top of the movable frame hive, with an excluder between, or you may place the old hive by the side of the swarm, but it must have some bees left to take care of the brood. At the end of 3 weeks, the brood will all be hatched out and you can drive out the rest of the bees and unite them with the bees in the new hive. It is a good plan, 10 days after making the first drive, to examine the box hive and destroy the queen-cells. Lengthy directions for transferring bees are given in the revised Langstroth book, the "Hive and Honey Bee."

2. Probably you start to open the hive before smoking them. The first thing to do, before you open a hive, is to give a few puffs of smoke at the entrance, for the door guards are apt to become angry otherwise. Some bees require more smoke than others. If they are smoked enough to compel the bees to fill themselves with honey, they become very peaceable.

3. It depends upon the manner of management in both cases. Dr. Mil , in his most successful management of 8-frame hives used 2 stories for breeding.

4. Yes, by all means, as they have more honey above the cluster proportionately. They are also better for extracted honey, because they give more room for breeding.

6. They may be made to ord , but are not listed in the ordinary catalogs

6. Separate stands are best. When you have several colonies on one stand and you handle one of them, it is apt to jar the others slightly and anger the bees. If you have them on a solid stone or concrete foundation there is no jar and it makes no difference.

## Frost in Hives—Sugar Candy—Clipping Queen's Wings

1. I have my bees in a stone house and every warm day the water runs out of the hives and freezes in an icicle on the bottom of the hives. The inside of the hives seems to be covered with frost. What causes this? I had my bees in the same place last year and they did fine. There is a sorghum mill on the farm and I noticed the bees were quite busy around there last fall. Do you think this has anything to do with the water running from the hives?

2. I melted sugar and made a hard candy and turned over the frames next to the bees for them to eat. Was this advisable?

3. I see a question was asked, "Is it advisable to clip the queen's wings when producing section honey?" You answered, "Yes, certainly." What is the idea in doing this?

ILLINOIS.

Answers.—1. Your hives are evidently more moist than last year. That is, the food must be more watery. The sorghum mill might explain it. It is possible, also, that your stone building is colder than it was last year. To remedy this, at least in part, place absorbents, such as woolen rags or dry leaves, over the cluster, after having removed any impermeable covering that may be placed over them. The moisture arising from the breath and perspiration of the bees will then be absorbed by the moisture absorbents.

2. Yes, that ought to remely the trouble to a certain extent, as sugar candy incites less perspiration than liquid food. Did you ever notice that when you drink much water you perspire more and pass more urine? Did you ever notice that when the weather is cold and you do not perspire you are compelled to pass more urine? The more watery food the bees consume, the more moisture they produce.

3. The only benefit in clipping the queen's wings is the prevention of the escape with a swarm. It is usually worth while.

## Mice—Shaking for Foulbrood—Cellar Wintering

1. I have 9 colonies of bees. 4 I left outside and 5 I took in the cellar; 2 of those in the cellar are in one hive, per your plan. I have trapped 6 mice this winter on the front porches of the hives. One mouse refuses to come out. I can see him by holding the lamp just right.

2. Six of my 9 have American foulbrood. Would you shake in fruit bloom or clover bloom?

3. I moved my 5 on November 1. Was that too early this year?

4. If I face t'em to the north will they not put in a longer day's work?

ILLINOIS.

Answers.—1. You might give poison to that mouse.

2. Wait till clover.

3. I think they could have flown later, and they would have been better for that later flight.

4. No, unless there is something unusual about the exposure.

## Cupule

I am very much interested in your plan for raising queens, as given on page 308 in the September number. But I don't know what you mean by cupule. Also I would like you to tell me where cupules can be had, and the cost. Also where the punch you speak of at the same time can be had. I will send for them both. WASHINGTON.

Answer.—The cupule is a cell cup similar to those used in the Doolittle system. You will find the Barbeau method described at length, with cuts, in the July, 1919, number of the American Bee Journal. That which is contained in the September number is additional information on the same subject. The one completes the other.

The dictionary explanation of the word "cupule" is: "A concave or cup-shaped depression, as in a level surface." The word is therefore correct.

Mr. E. Barbeau, of St. Eustache, Quebec, is the only man selling the implements of the Barbeau system. Write him.

As to the price of cell-cups, they are 75 cents per hundred, and may be had of almost any dealer in supplies. A queen-rearing outfit of the Doolittle system is worth about $6. This outfit is generally used only by queen breeders.

## Increase

I am a novice at the bee business. I have had bees for three years. Last year I made my increase by taking combs of brood and a queen to make my new colonies. I use 10-frame hives. I have sixteen colonies. Next spring I would like to increase to about twenty-five colonies and get honey, too. What method of increase would you recommend? I want to make my increase the last of May, as the clover flow begins the 15th of June.

INDIANA.

Answer.—It is out of the question to give you a detail of the best plan to make increase in this department. Here is a simple method:

Divide each colony that you wish to use for increase into two parts, before swarming time. Put half of the brood and more than half of the young bees into a new hive on a new stand. Give these a new queen, leaving the old queen on the old stand. Fill the empty space in both hives with frames of comb, or, if you have no comb, with comb foundation in full sheets.

There are many other ways. A half dozen different ways, adapted to different conditions are to be found in the book "A Thousand Answers to Beekeeping Questions."

## Bees Dying

1. I have, or "d have, four stands of bees in 8-frame hives, with plenty of honey for winter. I put them in their winter quarters December 1, in boxes, one hive in a place, on the south side of the house, with the south side of the box open. I have just one swarm and another is about all dead. I have the Italian bees and I noticed the swarm that died turned black before they died. Did they have a disease, or what was the matter?

2. There was 20 pounds of honey left in the hive. Would it be all right to leave it in the frames and use it for bees next swarming time?

NEBRASKA.

Answers.—1. Your colonies must have been weak, for they ought to winter well in outer boxes with the south side open. Perhaps you transported them to the south side of the house from another spot, in December. In that case they would lose many of their field workers who would go back to where they stood before and get lost. Their turning black is no evidence of disease. It is because they lose their hair. This is often the case with bees that die in winter.

2. Unless there is foulbrood in the combs, the honey is all right to use for other colonies.

## Feeding in Spring—Dysentery

1. I winter bees out of doors, by packing in case similar to Mr. Barber's, page 21, and owing to winter beginning about two months earlier than usual, it will be necessary to spring feed some weak colonies, which I have all in one case. I have some extracted honey taken from my own bees last fall This has an unpleasant flavor and was not put upon the market. It is candied, or granulated. Will this be good to feed? Should it be heated, and can it be fed from a stand in the yard, allowing the weak colonies only to have access to it on warm days of early spring?

2. Would it be well to allow access to rye flour during early spring, also plenty of water?

3. Can any harm come from feeding the above, even when fruit bloom is on?

4. When is a colony most likely to have dysentery, and is there a common remedy—or what is best to do?

NEBRASKA.

Answers.—1. It is all right to feed. But it is much better to put it inside of the hive, right over the cluster, especially if it is granulated. When the granulation is very coarse there is sometimes a little honey lost, but that is rare.

2. Yes. To attract them to rye flour, in a box outside, put some old combs over it. Pack the flour tightly in the box, in a little lump. Have water with floats, in some handy, sheltered spot. Some scientists say that flour is

useless, but we have fed hundreds of pounds and never saw them throw it away.

3. It is better to feed before fruit bloom or after.

4. Dysentery comes only from too long confinement, often with too watery food, sometimes because the honey contains many pollen grains. So we see it only at their first spring flights. As to a remedy, that is still an interrogation point.

### Bees Dying in Cold Weather

I have noticed for about a week quite a number of dead bees just outside of the entrance to one of my hives. Sometimes a good handful, and quite a few scattered out on the snow. The bees seem to come out when it is too cold to expect them to be out. The other hives do not show any bees out.

1. What would you think would make them do that?

2. Could they be lacking food? They had plenty when they went into winter quarters.

3. If it could be this, would you advise feeding them at this time, and how?

4. Would it be advisable to take off the winter packing and examine them now? During what time of the day would it be best to do this? ILLINOIS.

ANSWERS.—1. Sometimes a very strong colony will try to throw out its dead bees when the weather is hardly warm enough and some of the bees die on the snow. This may be the case. Again some bees may be suffering from full bowels, from too long confinement, and die on the snow. They would have to die anyhow, if they could not fly. If the dead bees appear to have been carried out it is rather a favorable sign. If there are signs of discharges of a darkish color about the entrance, it is an unfavorable sign.

2. No, it is not likely that they are lacking food. Starving bees stay in the cluster and die there.

3. It would not be advisable to try to feed them in winter.

4. Do not disturb them in the least till some warm day when you know they are able to fly. Then examine them. If they need food, give them a flat cake of candy, such as is recommended by all bee books. Put it right over the cluster and close over with some warm material.

### Increase—Rearing Queens—Queen Introduction

1. I have four swarms of bees and I want to increase them to eight or ten. How can I do this and also expect a crop of honey?

2. I thought I would set an empty story on top of the swarms and as soon as they work in this story I will move the lower story away. If this is right, how far should I move the lower story away?

3. If I remove a queen from a swarm in order to get cells which I want to put in with the new swarm, where can I keep the queen during the time they are making queen cells?

4. How should I introduce the queen again after I have enough cells made?

5. I averaged about 54 pounds of honey per colony. Is that a good flow? MISSOURI.

ANSWERS.—1. I know of no way that will insure a doubling of the number of colonies and a crop of honey, unless the season is very good. If I could tell in a few lines how to do this, there would be no need of books on beekeeping. You should read some work on this subject.

2. The upper story should have brood in it before you move either away. Else the story without brood would dwindle away unless it be given a queen.

3. Make a division with that queen and do not think of giving her back to the colony which is rearing queen cells. Remember that you should leave plenty of young bees in the colony that is rearing queen cells.

4. There will be no trouble in introducing the queen if you place her with some of her own bees in a division.

5. That is a very fair flow, if you did not get any swarms. If you got both swarms and this flow, you had a very good season.

### Increase—Carbon Bisulphide

1. I have eight hives of bees. I would like to increase to double that amount in the spring by dividing or manipulating them some way to make increase and have them raise their own queen. I have Hoffman frames of full sheets of foundation to put them on. Please tell me how to make the increase, and to get the foundation drawn out, and to get the best honey crop.

2. Will honey or combs which have been treated with carbon bisulphide affect the bees, or any person who eats it? How much bisulphide do you use for five hive bodies full of honey? PENNSYLVANIA.

ANSWERS.—1. A little before swarming time take half of the brood combs, with all the bees on them, from a colony, and put them in a new hive, being sure to leave the queen in the old hive, and larvæ less than three days old in the new hive. Fill the empty spaces on the side with frames of foundation. Then put this new hive in the place of another colony, placing the latter on a new stand. This will give you one division from two hives. You may divide half of your colonies in this way, and divide them again a few weeks later, when the young queens are laying. It is still better to rear queens beforehand by dividing only one colony at first to rear queen cells. But to answer your whole question fully would require a whole book. Better buy one of the text book, and if there are any points in them that you wish explained, this is the place for it.

2. Carbon bi-sulphide is extremely volatile and will evaporate readily. It is therefore harmless to the bees or the honey. The quantity recommended by Dr. Paddock in his Bulletin of "Beemoth" is a little over 2 ounces for 10 cubic feet of space, or seven hives. We use about a tablespoonful on a cloth for each hive. Remember that it is inflammable, explosive, and easily evaporated. It is very heavy, and should be put at the top and the hive hermetically closed, promptly.

### A Beginner

1. How do you keep bees from gluing the brood frames to the hives and to each other?

2. My bees all died, and I would like to get a start by catching passing swarms. There is a big cottonwood tree close to where I work and the bees from everywhere come there to gather the pollen from the buds in the early spring. If I should fasten a hive filled with combs in the brood frames while the bees were around in the spring would they notice it and when they swarm would they be apt to come to this tree and take up their abode in this hive? Nearest stands are about a quarter of a mile away.

3. As drones are always raised in drone combs, how can the queen tell whether she will lay a drone egg or a worker egg in these cells?

4. How are hives opened without jarring the bees, as they always glue the top down, and it takes prying to get it loose? ILLINOIS.

ANSWERS.—1. If the frames are made properly, they will be glued only at the shoulder hanging on to the rabbet of the hive at both ends. To loosen them, use what is called a "hive tool." A common wood chisel will do. We used nothing else for years. If your frames are of the Hoffman make they will be glued to one another along the upper third of the ends. That makes them a little more difficult to loosen. We prefer the free hanging frames, though the others are perhaps better for beginners.

2. You may be able to catch swarms by placing a hive in some open place, as high as convenient. But it is not necessary to have it out early, as the bees who hunt for pollen in early spring are not looking for a home. The scouts that hunt for a home usually do so about the time the swarm issues.

3. How does the queen know whether she is laying a drone or a worker egg? That is a puzzle to any one of us. But that she does lay drone eggs in drone cells and worker eggs in worker cells, as a rule, does not admit of a doubt.

4. If you use a honey-board over your brood chamber, it will always jar it to pry the board loose. We use either an oil cloth or a painted cloth over the frames, and it can be pulled off without jar. We remove it when we put on the sections.

### Texas Honey Producers Increase Capital Stock

We have just received notice that the capital stock of the Texas Honey Producers' Association has been increased from $15,000 to $50,000. This was necessitated by the enormous volume of business done, which requires keeping in stock at all times a large line of bee supplies and honey.

This association has done wonders for the Texas beekeepers since its organization. The whole of their 1919 honey crop is already sold, and at good prices, and the manager has had to turn down orders. All of this honey was sold in the State of Texas under the "Lone Star" brand.

Under its efficient manager, Mr. LeStourgeon, such success and growth should continue. Undoubtedly, every Texas beekeeper should take advantage of this opportunity of becoming a member of this live association. Its offices are at San Antonio.

### Washington Conventions

Two beekeepers' meetings were held in the State of Washington during the month of January. The State convention held at Seattle January 22-24 was well attended and the sessions were full of interest from start to finish. The assembly room in the Chamber of Commerce was well filled and sometimes crowded. A number of beekeepers from British Columbia were present. H. N. Paul was elected President, J. O. Wallace Vice President and George W. B. Saxton Secretary-Treasurer.

On January 26-27 the Inland Empire Association met at Spokane. Beekeepers from Eastern Washington and Idaho were present, with a number who had attended the meeting at Seattle. George W. York was elected President, Dr. C. E. Sheldon Vice President, and Mrs. J. E. Thompson Secretary.

There is a greatly increased interest in beekeeping in the State of Washington and the two organizations propose to keep things moving in the future. F. C. P.

### Co-operation in the Air

Beekeeping is conducted on a much larger scale in the west than in the east, and the question of co-operative marketing is a live subject at nearly every western convention.

# MISCELLANEOUS NEWS ITEMS

### Maryland Convention

The January meeting of the Maryland State Beekeepers' Association was held in the Rennert Hotel, Baltimore, Md., on the night of the 27th.

Approximately 40 people were present from Baltimore and the adjacent towns. Mr. C. G. Cale, Extension Apiculturist of the United States Department of Agriculture, delivered the main address of the evening, in which he emphasized the importance of the beekeeper adapting his practice to the instincts and behavior of the bees.

Mr. S. G. Crocker, Jr., Vice President of the Association, delivered a brief talk on the co-operative buying of bee supplies, advising that, if possible, supplies be bought in double quantity every other year rather than annually, except for those items which must of necessity be bought each year. He reported that the carload of supplies bought this year has been shipped to the individuals with the exception of a very small amount.

E. N. Cory, Secretary-Treasurer, spoke briefly of routine matters and then opened the meeting for a round table discussion on individual problems. In answering the questions that were propounded, Messrs. Cale, Crocker, Cushman, Atkinson and Cory helped to supply the answers.

The meeting adjourned at 11 p. m. The next meeting will be held about the middle of February.

### Nebraska Convention

The annual meeting of the Nebraska Honey Producers' Association was held January 19 and 20, and was very well attended. At this meeting the association pledged its support to the American Honey Producers' League. The officers for the next year are: President, R. W. Livers, of Hardy. Secretary-Treasurer, O. E. Timm, of Bennington, Neb.

### National at Buffalo

The annual convention of the National Beekeepers' Association will meet at Buffalo, N. Y., on March 9, 10 and 11, at the Statler Hotel. This date is a week later than first announced.

### Illinois Beekeepers, Notice

I expect to make a trip through the south part of the State this spring, so, friend beekeeper, let me hear from you, and I will gladly come your way and assist you in any way possible. Don't delay, but write me at once.

A. L. KILDOW,
State Inspector, Putnam, Ill.

### A Successful Correspondence Course

For the past two years a correspondence course in beekeeping has been offered by the Iowa College of Agriculture at Ames. The course has been very popular. The fee is $3 to residents of the State and $4 to those a living in other States, and includes two books on beekeeping. So many students after finishing the beginner's course have asked for advanced work that an advanced course has recently been provided, with a fee of $3 for residents and $3.50 for non-residents of Iowa. The fee includes a textbook. Since several hundred students have already completed the first course offered, it is expected that the advanced course will prove equally popular.

### An Experimental Project

A co-operative experimental project has been effected between the University of Tennessee, Knoxville and the Forest Ferguson Farms of Dyersburg, whereby experiments of benefit to Tennessee beekeepers will be carried out. O. H. Reichley, a graduate of the University of Ohio, has been placed in charge of the 100 colonies of bees in the experimental apiary. Mr. Reichley was named President of the Tennessee Beekeepers' Association in December. The Forest Ferguson Farms consist of 1,360 acres, where better Tennessee farming is being featured.

## Honey Plants in Japan

By Yasuo Hiratsuka

JAPANESE honey plants ought to be different from American, I suppose. There are in spring months:

Ume **(prunus Mume, Sieb et Zuce).** This is a garden tree mostly; yields some honey and an abundance of pollen. The bees make their force from this flower.

Tsubaki **(Tea Japonica, Nois).** Wild and garden flower; much pollen; blooms in January to March, according to locality.

Apples are not so common.

Aburana (rape) **(Brassica chinensis, 2)** is a common cultivated plant for the use of its seed to make oil; blooms March-April.

Genge (Japanese clover) **(Astragalus sinicus L.)** is our principal honey source in Japan, at least in the middle or southern parts of this country. Honey of the genge is water-white, or very light colored, fine quality; blooms in May for about thirty or more days.

Then comes a dearth season for honey flow. It is rather rainy weather almost every year. So our summer months are a heavy handicap for Japanese beekeepers; hence most of them go to northern parts of the country for migratory beekeeping with their bees.

In autumn there are hagi (bush clover) **(Lespedeza bicolor, Turcy).** The honey is light amber. The same is found in some mountain land. In low lands it does not yield nectar at all.

Soba (buckwheat) **Fagopyrum esculentum, Moench),** is a cultivated plant. Honey is black or heavy amber, as you know.

Naginata-kauju **(Elscholtria patrini, Garcke)** is a wild plant in Hokkaido (our northernmost district) only, or at least mostly. The honey of it is heavy colored.

China (tea) **(Thea sinensis, L),** blooms from about the first of October till the latter part of December.

It is planted in all of the middle or southern part of the country for the use of young leaves to make tea. It is only in use for winter stores, because it is so late of season.

Bima **(Eriobotrya Japonica, Lindle)** blooms about November till December or later. Honey is light in color. In some warm localities we can take some surplus from this flower.

Of course there are many subflows of honey from many wild plants that I cannot mention in so short a report.

Japan.

## Ligurian Queens Always Stayed in the Bottom Box

Some years ago, in describing my methods of manipulation in the American Bee Journal, I stated the above fact; but judging by the comments made on my article the beemen on your side did not catch on to what I meant; that is, not exactly. The matter was brought to my notice again by the article of Mr. Arthur C. Miller, page 309, American Bee Journal for September, under the heading of "One-story Jumbo, etc." In this he mentions that in a large proportion of the 2-story hives he had examined, the queens had gone up above and deserted the bottom box. One peculiarity of leather-colored Ligurian queens is that they will stick to the brood nest, and if they are compelled by lack of room to go above, they will return entirely to the former as soon as the pressure for room eases. In my opinion any breed of bees which deserts the brood nest under any conditions is not much good and should be gotten rid of.

MAJOR SHALLARD.
N. S. W., Australia.

(There is no doubt that leather-colored Italians, or, as Major Shallard calls them, Ligurian queens, place their brood in more compact form than the common bee or the hybrid. But our experience is that any queen which finds herself crowded for room to breed will leave the lower story. After all it is perhaps a question of latitude as to their returning below. —Editor.)

# CLASSIFIED DEPARTMENT.

Advertisements in this department will be inserted for three cents per word, with no discounts. No classified advertisements accepted for less than 35 cents. Count each initial or number as one word.

Copy for this department must reach us not later than the 20th of the month preceding date of issue. If intended for classified department it should be so stated when advertisement is sent.

## BEES AND QUEENS

CARNIOLAN QUEENS—$2, tested.
John Strgar, Queen Raiser, Bitnje.
P. Bohinska Bistrica, State of Serbs, Croats, Slovenes, Carniola, Europe.

FOR SALE—200 three-frame nuclei, $5 each, with 3 frames capped brood and honey. Delivered May 1; one-half down, balance just before delivery.
Irish Bros., Doctortown, Ga.

ITALIAN QUEENS OF WINDMERE will be ready in May. Untested, $1.25 each; six for $7. Tested, $2 each; select tested, $2.50 each. Now booking orders.
Prof. W. A. Matheny, Ohio University,
Athens, Ohio.

FOR SALE—Choice Iowa bred 3-banded untested Italian queens, after June 15, $1.75; July, $1.50; August and September, $1.25 each. J. R. Coon, Ames, Iowa.

FOR SALE—3-banded Italian queens from best honey-gathering strain obtainable; (no disease). Untested queens, $1.25 each; 6, $6.50; 12, $12. Select untested, $1.50 each; 6, $9; 12, $18. Tested, $2.50 each. Safe arrival and satisfaction guaranteed. Your orders filled promptly. W. T. Perdue & Sons,
R. No. 1, Fort Deposit, Ala.

FOR SALE—Highest grade 3-banded Italian queens, ready June 1. Queen and drone mothers are selected from stock of proven worth in hardiness, gentleness, honey production and disease-resisting qualities. Untested, each, $1.25; 6, $6.50; 12, $12; 50, $47.50; 100, $90. Your correspondence will receive prompt attention, and I guarantee satisfaction.
A. E. Crandall, Berlin, Conn.

BOOK YOUR ORDERS for QUEENS now—Goldens, $2; tested, $3; banded, $1.50; tested, $2.50; six or more 10 per cent less.
Clover Leaf Apiaries, Wahoo, Neb.

FOR SALE—100 hives of bees, 100 new hives, 10-frame, nailed, unpainted, wired for foundation; 1 4-frame Kretchmer extractor; other supplies. Cause for selling, death of owner.
Mrs. R. R. Marble, Holstein, Neb.

FOR SALE—2-pound packages bees with Italian queen. Price list mailed on request.
Allenville Apiaries, Allenville, Ala.

FOR SALE—From 10 to 150,000 pounds of sweet clover honey. It is guaranteed pure. In 60-pound cans, two cans to case. If interested, send for sample.
A. A. Tucker, Cowley, Wyoming.

FOR SALE—160 acres in the best natural bee pasturage in the west. Cheap.
W. F. Minchin, Sheridan, Oregon.

FOR SALE—75 colonies Italian bees, with all equipment. Supplies worth $1,600, not counting bees or honey in hives; $1,000 cash takes the outfit, or will lease to good man to run on shares. P. J. Thullen,
327 Walker St., Huntsville, Ala.

"QUALITY" THREE-BANDED ITALIANS from excellent stock; untested queens, 1, $1.50; 6 for $7.50; 12 for $13.50; 50 for $55; 100 for $100. N. J. James,
1185 Bird Ave., San Jose, Calif.

MOTT'S Northern Bred Italian Queens— I have breeding mothers place in the south for April and early May queens. Plans "How to Introduce Queen and Increase," 25c. If you want beauty with the best of summer and winter laying birds, try a setting of my Golden Campines.
E. E. Mott, Glenwood, Mich.

FOR SALE—Package bees, dependable queens.
E. A. Harris, Albany, Ala.

FOR SALE—90 colonies of bees in Dadant hives; complete operating equipment and 88 empty Dadant hives.
Baxter Bros., Leavenworth, Kans.

FOR SALE—A. I. Root strain of resisting and honey-gathering, leather-colored Italian queens. Untested queens, $1.50 each, 25 or more $1.40. Tested, $2.50 each, 25 or more, $2.25. Select tested, $3. For larger amounts write. A. J. Pinard, Morgan Hill, Calif.

FOR SALE—2,000 pounds of bees in pound packages, early.
H. E. Graham, Gause, Texas.

FOR SALE—18 colonies of bees; also hives and supplies. Box 606 LaBelle, Mo.

FOR SALE—Italian queens from some of the best stock in the United States, mailed as soon as hatched. Safe arrival guaranteed to any part of the United States and Canada. All queens mailed in improved safety introducing cages. Order early. Send for circular. Prices, April to October 1, 75c; 10, $6; 50, $27.50. James. McKee, Riverside, Calif

ITALIAN BEES (the kind that fill from 2 to 6 supers), for sale, in new 8 and 10-frame Root hives, at $12 and $15 per colony, if ordered soon. Bees to be shipped by express in April. Queens after May 1.
Miss Lulu Goodwin, Mankato, Minn.

1920 PRICES on nuclei and queens, Miller strain. Queens, untested, $1.50 each, $15 per doz.; tested, $2.00 each, $22 per doz. One-frame nuclei, $3; two-frame, $5; three-frame $6.50, without queens, f. o. b. Mason, Miss. Five per cent discount in lots of 25 or more. We have never had any bee or brood disease here. Will have no queens except with nuclei, until June 1. Safe arrival and satisfaction guaranteed.
Geo. A. Hummer & Sons Prairie Point, Miss.

HARDY Italian queens No bees
W. G. Lauver, Middletown, Pa.

1920 PRICES for "She Suits Me" queens. Untested Italian queen, from May 15 to June 15, $1.50 each. After June 15, $1.30 each; $12.50 for ten; $1.10 each for 25 or more.
Allen Latham, Norwichtown, Conn.

FOR SALE—I will book orders for a limited amount for 3-banded Italian bees in 8-frame hives. All queens sent out in May are 1919 tested. Safe delivery guaranteed on journey within 48 hours. Begin shipping May 20

Full colony with tested breeding queen, $18.
Full colony with tested utility stock, $16.
3-frame nucleus tested breeding queen, $8.75.
3-frame nucleus tested utility stock, $6.75.
2-frame nucleus tested breeding queen, $7.50.
2-frame nucleus, tested utility stock, $5.50.

June and July Delivery:—

1-lb. package bees with untested queen, June, $4; July, $3.50.

2-lb. package bees with untested queen, June, $6.50; July, $5.50.

2-frame nucleus with untested queen, June, $6; July, $5.

3-frame nucleus with untested queen, June, $7.50; July, $6.50.

Tested breeding queens, $5 each. Tested queens, $3 each. Untested queens, $1.50 each, or 6 for $8.

Terms, 10 per cent with order, balance first of month shipped in; or 5 per cent discount for cash with order. Catalog ready about Feb. 15, free.
J. W. Bittenbender, Knoxville, Iowa.

FOR SALE—Leather colored Italian queens, tested, June 1, $1.50; untested, $1.25; $13 a dozen. Root's goods at Root's prices.
A. W. Yates, 15 Chapman St., Hartford. Conn.

FOR SALE—After April 15, our golden Italian queens, untested, one $1.50 or $15 per doz.; select untested, one, $1.75 or $18 per doz.; tested, $3 each. Safe arrival guaranteed. Tillery Bros.,
R. 6, Georgiana, Ala.

FOR SALE—Goldens that are true to name. Select untested, one, $1.50; six, $7.50; 12, $13.50; 50, $65; 100, $100.
Garden City Apiaries, San Jose. Calif.

FOR SALE—Golden and three-band queens. Untested, April, May and June delivery, $1.25 each; $12.50 per doz. Satisfaction.
R. O. Cox, Rt. 4, Greenville, Ala.

FOR SALE—Pure 3-band Italian queens, as good as you can buy with money. Write for prices. J. F. Diemer, Liberty, Mo.

BEES BY THE POUND, ALSO QUEENS—Booking orders now. Free circular gives prices, etc. See larger ad elsewhere.
Nueces County Apiaries, Calallen, Texas,
E. B. Ault, Prop.

BEES AND QUEENS from my New Jersey apiary. J. H. M. Cook,
1Atf 84 Cortland St., New York City.

## HONEY AND BEESWAX

FOR SALE—A carload of white alfalfa honey. The one that gives me the best offer gets it. Send 10 cents for a sample.
Daniel Wurth, Wapato, Wash.

FOR SALE—We have a limited amount of our crop white clover, extracted basswood honey, all packed in new 60-lb. cans, 2 to the case. Write for prices.
D. R. Townsend, Northstar, Mich.

FOR SALE—Clover and buckwheat honey in any style container (glass or tin). Let us quote you. The Deroy Taylor Co.,
Newark, N. Y.

WANTED—Comb, extracted honey and beeswax. R. A. Burnett & Co.,
6A12t 173 S. Water St. Chicago. Ill.

FOR SALE—New crop clover extracted honey, two 60-pound cans to case, 25c per pound. Buckwheat and clover mixed, about half and half, 20c per pound.
H. G. Quirin, Bellevue, Ohio.

WANTED—White clover or light extracted honey. Send sample; state how honey is put up and lowest cash price delivered at Monroe; also buy beeswax.
E. B. Rosa, Monroe, Wis.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendering. Fred W. Muth Co.,
204 Walnut St., Cincinnati, Ohio.

## SUPPLIES

FOR SALE—8 and 10-frame hive bodies, covers and bottoms, Hoffman brood frames. I make them and can save you money. Odd size hives and frames made to order. Write for price list. F. D. Bowers, Sugar Grove, Pa.

FOR SALE—Used 5-gal. square cans, 2 in a case; good, bright cans; first-class cases, 50c per case f. o. b. my station.
Floyd Markham, Ypsilanti, Mich.

FOR SALE—60 10-frame 4x5x1¾ plain section supers, with sections, section holders and fences, about 30 painted; been used one season. No foulbrood. Best offer takes the lot.
F. D. Stephens,
Box 383 West Branch, Mich.

SEND us a list of goods wanted and will quote you lowest prices. We are the money-saving house. Price list free. Try us,
H. S. Duby & Son, St. Anne. Ill.

FOR SALE—259 shallow extracting supers, 9 excluders; a bargain; write.
James McKee, Riverside, Calif.

FOR SALE—Thirty 10-frame hives with metal covers. Thos. Cordner, Sparta, Wis.

FOR SALE—4-frame No. 25 Cowan improved extractor, reversible, $25; also a Root capping melter, good as new, at $10, or both for $30. H. Greulick, Scotia, N. Y.

WANTED—Two or four-frame Cowan extractor, steam heated knife, cappings melter can.
Wm. C. Wilson, St. Charles, Mo.

FOR SALE—16 empty 8-frame hive bodies at 50c each. 75 comb honey supers and fixtures, 50c each; practically as good as new; changing to larger hives. Jas. I. Estes, Liberty, Mo.

FOR SALE—Used 5-gal. cans. Every one bright inside and washed outside. New corks; no leakers. Cases complete, case of 2, $1; 10 cases, $8. Carload if you wish. Will take honey, wax or cash.
Bruner, 3836 N. Kostner Ave, Chicago.

FOR SALE—Good second-hand 60-lb cans, two to the case; used only once, 60c per case, cash with order. E. B. Rosa, Monroe, Wis.

FOR SALE—1,000 Standard bee hives in flat 8 and 10-frame sizes; supers with sections; full depth and shallow extracting frames. Entire lot new and strictly first-class. We will sell in large or small quantities at low prices.
The Stover Apiaries, Helena, Ga.

I MANUFACTURE cypress bee hives, and sell Lewis' beeware. Write for booklet.
J. Tom White, Dublin, Ga.

## SITUATIONS

WANTED—One experienced man, and students or helpers, in our large bee business; good chance to learn. Modern equipment and outfit, including auto truck; located near summer resorts. Write, giving age, height, weight, experience, reference and wages wanted.
W. A. Latshaw Co., Clarion, Mich.

WANTED—Situation by single man, interested in beekeeping, but lacks experience. Would be a willing assistant. Harry Freehauf, 814 Eighth St., Milwaukee, Wis.

WANTED—In April, one familiar with modern beekeeping practice to run small apiary (fifty colonies) and help out with gardening, poultry, lawn, etc Pleasant surroundings, on modern 1,100-acre farm. L. W. Smith, Madison, N. J.

WANTED—Queen breeder for 1920 season. State experience and salary expected. Also need helper. M. C. Berry & Co., Hayneville, Ala.

WANTED—Man for season of 1920 to work with bees. State age, experience and wages. We furnish board. Opportunity for permanent situation to right man. Also want man to work in shop, put up honey and do general shop work and make deliveries.
The Rocky Mountain Bee Co.,
Box 1319, Billings, Mont.

WANTED—One experienced man and students, as helpers with our 1,000 colonies. Best opportunity to learn the business from A to Z, in the actual production of carloads of honey; theory also. Write immediately, giving age, height, weight, habits, former employment, experience, references, wages, photo, all in first letter.
E. F. Atwater, Meridian, Idaho.
Former Special Field Agent in Beekeeping, U. S. Dept. Agr., for California, Arizona and New Mexico.

WANTED—Good bee-man to run 500 colonies bees for extracted honey during coming season. Give references, salary expected and experience in first letter. Dr. D. W. Gibson, Beaver, Utah.

WANTED—One or two good queen-rearing men to begin work February 16, 1920. Nueces County Apiaries, Calallen, Texas.

## FOR SALE

FOR SALE—200 supers for 8-frame hives, about 50 for 1⅞, 150 for plain sections, with fence A1 for 4¼x4¼ sections. All factory made, some mitered at corners; all about as good as new. All new sections and started with 2 in. foundation, $1 each in lots of 10 or more. J. W. Bittenbender, Knoxville, Ia.

OLD-TIME BEE BOOKS—50 to 250 years old. Every beekeeper should own at least *one*. Send for price list. John E. Miller, 114 East 27th St., New York City.

FOR SALE—Cedar or pine dovetailed hives; also full line of supplies, including Dadant's foundation. Write for catalog. A. E. Burdick, Sunnyside, Wash.

FOR SALE—"Superior" Foundation (Weed process). Quality and service unexcelled. Superior Honey Co., Ogden, Utah.

FOR SALE—20-acre farm, 200 colonies bees with equipment; one acre ginseng and goldenseal; excellent soil, buildings and bee location. L. Francisco, Moon Rt., Dancy, Wis.

10-ACRE FRUIT RANCH—300 commercial apple trees, balance in cherry, plum, pear, peaches, gooseberry, currants and asparagus. Situated in the heart of well improved, irrigated district near Santa Fe railroad. Additional land adjoining for farming can be purchased or rented Good roads, churches and brick schools. New 7-room modern-built house, telephone, etc; 100 colonies of Italian bees in 10-frame hives; no disease. Full equipment, motor, extractor, etc. Established trade for full capacity production—sweet clover and alfalfa honey. Will sell ranch or bees separate, or will exchange for place of similar value and conditions in south, southwest or southeast. Box 214, Springer, New Mexico.

FOR SALE OR EXCHANGE—Four-horsepower kerosene engine, ripping table saw, belting, grinding outfit; for motorcycle. Cecil Whitt, Gimlet, Ky.

FOR SALE—Good second-hand double-deck comb-honey shipping cases for 4¼x5¼x1⅞ sections, 25 cents per case, f o. b. Cincinnati; terms cash with order.
C. H. W. Weber & Co., Cincinnati, Ohio.

FOR SALE—About 50 colonies of bees, mostly Italians; also complete hives, supers, comb and extracted, and other used equipment. Bees and supplies are located near Lansing, Mich. Duplicate volumes A. B. J. and Gleanings also for sale or exchange. F. Eric Millen, O. A. C., Guelph, Ontario, Canada.

FOR SALE OR EXCHANGE for bees, pound package or nucleus—One 22-caliber Meriden repeating rifle, 20-shot, $20; one Remington standard typewriter No. 6, $45, excellent shape. V. O. Blaylock, Roxboro, N. C.

## WANTED

WANTED—By experienced woman, small apiary in northwest to run on shares; or work in large apiary. Mildred Sturdevant, Boulder, Mont.

WANTED—Foundation machine, 10 or 12-in. rolls, and one 4 or 6-frame extractor.
Wilbrod Montpetit,
St. Louis de Gonzague Co., Beauh,
P. O. Quebec, Canada.

WANTED—On mountain farm near Bluemont, Va., beekeeper who wants good location, house, garden, fuel, fruit, spring, use of horse and cow, in return for looking after the place.
J. A. Truesdell,
612 Riggs Bldg., Washington, D. C.

WANTED—Around 75 colonies of bees, near South Dakota. Fred Day, Alcester, S. Dak.

WANTED—Bees—Commercial apiaries completely equipped for extracted honey production, at reasonable terms, in white honey region; preferably 300 colonies or more.
G. H. Cale,
423 Dorset Ave., Chevy Chase, D. C.

WANTED—Nearby, disease-free and in good condition, used 8 and 10-frame standard hives; also supers, excluders and empty combs wired. Could use few colonies healthy bees. L. W. Smith, Madison, N. J.

WANTED—Your old combs, cappings and slumgum to render into beeswax. We get enough more wax with our well equipped presses to pay for our work. Dadant & Sons, Hamilton, Ill.

WANTED—200 or less colonies of bees (any style hive) for spring delivery. Address. A. W. Smith, Birmingham, Mich.

WANTED—To buy bees free from disease, for April delivery, in southeastern Minnesota or western Wisconsin. State how many, kind of hives and price. P. B. Ramer, Harmony. Minn.

WANTED—Your order for "Superior" Foundation. Prompt shipments at right prices. Superior Honey Co., Ogden, Utah.

## MISCELLANEOUS

WANTED—Beeswax, old combs and cappings to render on shares. Will pay highest market price and buy your share of the beeswax. F. J. Rettig & Sons, Wabash, Ind.

WRITE for shipping tags and our prices for rendering your old combs, cappings. etc. We guarantee a first-class job. The Deroy Taylor Co., Newark, N. Y.

FOR SALE—100 early cabbage or 100 early tomato plants, 60 cents; 100 sweet mango plants, $1, post paid. J. F. Michael, R. 1, Winchester, Ind.

FOR SALE—40-acre farm in southern Minnesota; fine place for bees and chickens; good corn and potato land; good buildings; black clay soil, price $3,600; $1,000 cash, balance at 6 per cent. Thos. Dildine, Kellogg. Minn.

ONE MINUTE CAMERA OUTFIT and observation bee hive; will exchange for kodak or typewriter. Cecil Whitt, Gimlet, Ky.

FINE Kentucky maple trees, 6 months old, for shade purposes, 6 delivered anywhere, $1. Cecil Whitt, Gimlet, Ky.

FOR SALE—California Wonder Corn for seed, doubles yield. Send for circular. James McKee, Riverside, Calif.

FOR SALE—25-20 Winchester model,1896 32 double action revolver. Edward Hogan, Stanley, N. Y.

## ITALIAN QUEENS

The Old Reliable Three-Banded Italians. The best allround bee to be had. Queens ready to mail April 1. Will book orders now. Will guarantee safe arrival in United States and Canada. Prices for April and May:

Untested,, $1.50; 6, $8; 12, $15
Tested, $2.25; 6, $12; 12, $22.
Select tested. $3 each.

Descriptive circular and price list free.

**JOHN G. MILLER,**
723 C Street, Corpus Christi, Texas.

## AM BOOKING ORDERS

now for 1920 queens. Untested, $1.50 each; 25 or more, $1.35. Tested, $2.50 each; 25 or more, $2.25. Select tested, each, $3.

Limited amount of bees for early shipment. My descriptive circular tells about it. Write me your needs.

**R. V. STEARNS**
**BRADY, TEXAS**

## The Correct "Red" Color

has been the chief topic of discussion among "Red" breeders. We have issued a beautiful color reproduction showing a trio of R. I. Reds in the *correct* red shade. This together with "Blue Ribbon Reds"—an authoritative book on mating, judging and exhibiting this popular breed—is free with every 2-year subscription to the R. I. Red Journal —all for 50c. Don't miss this! Send today.

**THE RHODE ISLAND RED JOURNAL**
3042 Bremer Ave. WAVERLY, IOWA

## EAGLE "MIKADO" PENCIL No. 174

174
EAGLE MIKADO
No2
EAGLE NEW

Regular Length, 7 inches

For Sale at your Dealer. Made in five grades
Conceded to be the Finest Pencil made for general use.

**EAGLE PENCIL COMPANY, NEW YORK**

# TENNESSEE-BRED QUEENS

**Forty-Eight Years' Experience in Queen-Rearing**

**Breed Three-Band Italians Only**

**PRICES OF QUEENS**

| | Nov. 1st to June 1st | | | June 1st to July 1st | | | Jnly 1st to Nov. 1st | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1 | 6 | 12 | 1 | 6 | 12 | 1 | 6 | 12 |
| Untested | $2.00 | $ 9.00 | $16.80 | $1.50 | $ 8.00 | $14.50 | $1.30 | $ 7.50 | $13.50 |
| Select Untested | 2.25 | 10.50 | 18.00 | 2.00 | 9.50 | 16.00 | 1.75 | 8.50 | 15.00 |
| Tested | 3.00 | 16.50 | 30.00 | 2.50 | 12.00 | 22.00 | 2.00 | 10.00 | 18.50 |
| Select Tested | 3.50 | 19.50 | 36.00 | 3.00 | 16.50 | 30.00 | 2.75 | 15.00 | 27-00 |

**Select queens tested for breeding, $5.**

**The very best queens, tested for breeding, $10.**

Queens for export will be carefully packed in long distance cases, but safe delivery is not guaranteed. I sell no bees by the pound, or nuclei, except with high-priced breeding queens. Capacity of yard, 8,000.

**JOHN M. DAVIS, Spring Hill, Tenn.**

Importer and breeder of three-band Italian Queen Bees.

Depot and express offices, Ewell Station, on L. & N. R. R.

P. O. Spring Hill, Tenn., U. S.

# MARSHFIELD GOODS

## BEEKEEPERS

We manufacture millions of **sections** every year that are as good as the best. The **cheapest** for the **quality; best** for the price. If you buy them once, you will buy again.

We also manufacture **hives, brood-frames, section holders** and **shipping cases.**

**Our Catalog is free for the asking**

**MARSHFIELD MFG. CO., Marshfield, Wis.**

# BEEKEEPERS' SUPPLIES—QUALITY AND SERVICE

Now is the time to order your season's supply of Bee Material so as to have them ready for the honey flow. For lack of hives and other goods, you cannot afford to let your bees fly away, **bees are valuable.** We have everything required for practical beekeeping. Our goods for ideal of quality, quality of workmanship. Our 1920 catalog is now ready to send out, send for one, it is full of good stuff.

**AUGUST LOTZ CO., Boyd, Wis.**

# PAINT WITHOUT OIL

**Remarkable Discovery That Cuts Down the Cost of Paint Seventy-Five Per Cent.**

**A Free Trial Package is Mailed to Everyone Who Writes.**

A. L. Rice, a prominent manufacturer of Adams, N. Y., has discovered a process of making a new kind of paint without the use of oil. He calls it Powdrpaint. It comes in the form of a dry powder, and all that is required is cold water to make a paint weather proof, fire proof, sanitary and durable for outside or inside painting. It is the cement principle applied to paint. It adheres to any surface, wood, stone, or brick; spreads and looks like oil paint, and costs about one-fourth as much.

Write to Mr. A. L. Rice, Manufacturer, 23 North Street, Adams, N. Y., and he will send you a free trial package, also color card and full information showing you how you can save a good many dollars. Write today.

# PORTER BEE ESCAPE SAVES HONEY TIME MONEY

PORTER
BEE ESCAPE
PATENTED

**For sale by all dealers.**
**If no dealer, write factory**
**R. & E. C. PORTER, MFRS.**
**Lewistown, Illinois, U. S. A.**
(Please mention Am. Bee Journal when writing)

# BEES

We furnish full colonies of Italian bees in double-walled hives, single-walled hives, shipping boxes and 3-frame nucleus colonies.

**I. J. STRINGHAM, Glen Cove, N. Y.**
**NASSAU, CO.**

# BEE SUPPLIES

**FALCON LINE**

Best goods made. Get our big discount sheet before buying.

C. C. CLEMONS BEE SUPPLY COMPANY
128 Grand Ave.
Kansas City Mo.

# BETTER SEEDS

**Pheasant Eye Beans.** New bush stringless—**35** day Beans, **Hot Squash Peppers.** Carrots sweet enough for Pies. **New Narrow Grain Sugar Corn.** Also Red Skin Dent corn, shock it in **70 days.** Write for complete **Seed Catalog No. 22**

**J. A. & B. LINCOLN, Seed Growers**
**39 South La Salle Street Chicago, Illinois**

# Crop and Market Report

Compiled by M. G. Dadant

There is very little to report since last month. The demand for honey on the part of the consumer seems to be slackening, so that most of the wholesalers should have sufficient on hand to supply their customers for the balance of the spring.

Smaller beekeepers are probably nearly all sold out of honey and are bending their efforts towards the coming season. The larger associations also have sold a large proportion of their output satisfactorily

There are still a few large producers who have not disposed of their crop and who are now seeking a market. It is hardly likely that these will get a higher price now than was ruling two months ago.

More and more the honey producer is tending towards co-operative marketing, as he should. We cite as instances of lack of proper knowledge of conditions one Illinois producer who disposed of his whole crop of several thousand pounds at 13 cents. We also have reports that some Cuban producers were forced to sell as low as $1.20 per gallon, or 10 cents per pound, for a good grade article.

### Wintering and Prospects

Some reports of large losses are coming in, though it is yet too early to give an idea of what the loss will be.

White clover prospects in some sections seem extra fine, while in many others only mediocre.

We expect to have a fuller report for the April issue.

TWO NEW BEE BOOKS

We have just completed publication of two new bee books, special in their field, and for which there has been insistent demand

AMERICAN HONEY PLANTS

Including those important to the beekeeper as sources of pollen

By FRANK C. PELLETT

This book is the result of many years of personal investigation and travel from New England to California and from Canada to Florida and Texas to secure first-hand information on the sources of nectar and pollen. It is splendidly illustrated with 156 photographs, and describes the honey plants of all parts of America. A list of the honey plants of each State is given separately and the plants described in alphabetical order.

A knowledge of the flora is important to every beekeeper, as it is often possible to double the crop by moving an apiary but a few miles. This book is written by an expert beekeeper and a competent observer, only after having visited apiaries in most of the important honey-producing districts.
300 large 8vo pages. Enameled paper. Price $2.50.

OUTAPIARIES

By M. G. DADANT

The development of beekeeping has been in direct relation to the extension of outyards in most localities. The Dadant family has kept bees extensively in the same locality for three generations and the author of this book has spent his life in commercial honey production.

The book deals with the business of beekeeping on a large scale, and describes the methods and practice of the most successful beemen. Special chapters on honey houses and equipment, autos and trucks and similar apparatus required by the extensive honey producer.

125 pages, 50 illustrations. Price $1.

Add 75 cents to the price of either of the above books and get the book and the American Bee Journal for a full year.

AMERICAN BEE JOURNAL, Hamilton, Illinois

"falcon"

# I am a "falcon" bee

"falcon"

I live in a "Falcon" hive.

I am gentle and contented. I love to work in my home because everything is just as I like it.

The hive body is well constructed; that is why our honey crop is always plentiful.

Our queen is a "Falcon" queen—she is a three-banded Italian of pure healthy stock.

We all agree that our colony is successful, but so are all the "Falcon" hives in our apiary.

The other bees tell me when we meet in the fields.

Send at once for a "Falcon" queen, a hive or any bee supplies you need. Don't delay. Spring will soon be here.

"Falcon" bees and supplies always give the best results.

**I KNOW BECAUSE—I AM A "FALCON" BEE**

**W. T. FALCONER MANUFACTURING CO., Falconer, N. Y.**
**Where the best Bee Hives come from**

## QUEENS, SELECT THREE-BANDED ITALIANS

Reared from the best mothers and mated to select drones.

**Prices for May and June:**

| | One. | Six. | Twelve. |
|---|---|---|---|
| Untested | $2.00 | $ 9.00 | $16.80 |
| Select untested | 2.25 | 10.50 | 18.80 |
| Select tested | 3.50 | 19.50 | 35.00 |

Orders booked now for May delivery, one-fourth down, balance to be paid before queens are shipped. Pure mating, safe arrival and entire satisfaction guaranteed. Wings clipped free.

**HARDIN S. FOSTER, Columbia, Tenn.**

## EARLY QUEENS BY RETURN MAIL

**IF YOU WANT THE CHEAPEST BUY THE BEST**

Weather permitting, I will begin mailing my bright Italian Queens April 1, at the following prices:

Untested, single, $1.50, six for $7.50, twelve for $14. Select tested for breeding, $4 each.

Can fill no more orders for nuclei till after June 15, or queens till June 10.

If queens are wanted add kind and price. I guarantee every queen I send out, and your money refunded if not satisfied. I also guarantee safe delivery, free from disease; and quick service. All orders will receive prompt attention and will be filled by return mail, or as soon as possible after receiving your order. Now is the time to send in your orders if you want early queens.

**A. B. MARCHANT, Jesup, Ga.**

PAT. JULY 30, 1918

**C.O.BRUNO NAILING DEVICE**

*Made for the Huffman Brood Frames.* A combined Nailing, Wiring and Wedge Clamping Device. Has been tried and is guaranteed to do accurate work.

PRICE $7.50

Complete directions for operating are furnished with each device.

Manufactured by C. O. BRUNO
1413 South West Street, Rockford, Illinois

BEE SONGS, 2c EACH

I will mail copy of **"Songs of Beedom,"** having 10 bee songs, for only 20c; 7 Teddy Bear souvenir postal cards for 10c; J. J. Wilder's book, "Southern Bee Culture," 30c; Danzenbaker 3½ in. Bee Smoker, 90c. All postpaid at prices given. Address GEORGE W. YORK,, 1128 W. Glass Ave., Spokane, Wash.

Write for Price List and Booklet descriptive of

**HIGH-GRADE**
**Italian Queens**

**JAY SMITH**
**Route 3**
**Vincennes, Ind.**

## BEST GOLDEN ITALIANS

**BEN G. DAVIS,** SPRING HILL TENN.

# QUEENS—DOOLITTLE'S—QUEENS

Equal to any, superior to many. Doolittle's strain of three-band pure Italians have long been recognized as America's standard. Get them here and stock your apiaries with disease resisters, from a location free of disease. They are gentle and do justice in the supers.

Satisfaction and safe arrival guaranteed, or your money back.

Prices, cash with order, are as follows:

| | Before July 1. | | | July 1 to Nov. 1. | | |
|---|---|---|---|---|---|---|
| | 1 | 6 | 12 | 1 | 6 | 12 |
| Untested | 2.00 | $8.50 | $15.00 | $1.25 | $6.50 | $11.50 |
| Select Untested | 2.25 | 9.50 | 18.00 | 1.50 | 7.50 | 13.00 |
| Tested | 3.00 | 16.50 | 30.00 | 2.00 | 10.00 | 18.50 |
| Select Tested | 3.50 | 19.50 | 35.00 | 2.75 | 15.00 | 27.00 |

Larger quantities less in proportion to number and time wanted. No nuclei except to accompany tested or select tested queens. Write for prices.

**JENSEN'S APIARIES, PENN, Lowndes Co., Miss.**

# BEEKEEPERS ATTENTION

You can make your business more profitable and easier to handle through the proper use of modern equipment. This is supplied in LEWIS BEEWARE by

**WESTERN HONEY PRODUCERS**
**SIOUX CITY, IOWA**

SEND LIST OF YOUR NEEDS OR REQUEST FOR NEW CATALOG TO DEPT. B

# THAGARD'S ITALIAN QUEENS

I am booking orders for April to July deliveries. My three-band queens are bred from imported stock; they are hardy, prolific, gentle, disease-resisting and honey producers.

Untested queens, $1.50; 6, $7.50; 12, $13.50. Select untested queens, $1.75; 6, $9; 12, $16.
I guarantee pure mating, safe arrival and perfect satisfaction. Circular free.

**V. R. THAGARD, Greenville, Ala.**

# QUEENS POUND PACKAGE BEES QUEENS

## WANTED THE BEST BREEDING QUEEN THAT IT IS POSSIBLE TO SECURE

If you have one that has proven *exceptionally good*, give price and full description in first letter. If you have a queen that you would like to have 50 or more queens reared from, send her along and get them at my regular prices. I will book orders for 3,000 pounds bees for May delivery; one-fourth cash with order, balance May 1. First come, first served.

PRICES OF BEES, F. O. B. HERE, BY EXPRESS

| | |
|---|---|
| 5 1-lb. packages, each | $3.00 |
| 5 2-lb. packages, each | 4.50 |
| 5 3-lb. packages, each | 6.00 |

To above prices add price of queens wanted; 1 per cent discount on 25 or more packages; 1 per cent off for return of package.

3-BANDED ITALIAN QUEENS—April and May Delivery

| Virgins | Untested | Select Untest | Tested | Select Tested. |
|---|---|---|---|---|
| 1—$1.00 | $2.00 | $2.25 | $3.00 | $4.00 |
| 6— 4.50 | 9.00 | 10.50 | 16.00 | 24.00 |
| 12— 8.00 | 17.00 | 19.00 | 30.00 | 40.00 |

Breeding queens, $5 to $10.

Ask for prices on colonies and nuclei.

**W. O. VICTOR, Queen Specialist. Uvalde, Texas**

# MONEYCOMB

## THE ALUMINUM HONEYCOMB

### THE WAY TO GREATER PRODUCTION

We are shipping **"MONEYCOMBS"** all over the civilized world, their success is tremendous.

The question is not, can you afford them, but how can you do without them? Make your bees be efficient.

Beeswax is the most costly product of the honeybee and since wax for comb building can only be produced at the expense of many times its weight in honey it is well that the ingenuity of man has invented one of the greatest aids to profitable beekeeping—the Aluminum Honeycomb.

With **MONEYCOMB** you can:

1. **Produce more honey**
2. **Extract cleaner, no breakage**
3. **Control all disease**
4. **Raise more brood**
5. **Save loss from melting and destruction by animals and insects**

"The Aluminum Comb 'MONEYCOMB' is here to stay; its assistance to beekeepers is invaluable.
"H. B. PARKS, State Apiary Inspector of Texas."

"My honeyflow was so light the bees would not draw out the foundation. I was compelled to use aluminum combs, 'MONEYCOMBS,' for brood rearing, and they proved an unqualified success.
"GEORGE D. SHAFER, Palo Alto, Calif."

"My experience with 'MONEYCOMBS,' the aluminum honeycomb, caused me to rank it with the centrifugal extractor.
"A. Z. ABUSHADY, editor of 'Bee World' and Secretary of Apis Club, Benson, Oxon, England."

"I have conducted exhaustive experiments with 'MONEYCOMB,' the aluminum honeycomb, and can heartily recommend it as the most satisfactory honeycomb I ever used in my long experience of bee raising. PROF. WILL C. STEINBRUNN,
"Principal of Los Gatos School of Apiculture, San Jose Street, Alameda, Calif."

Our Factory is now fully equipped and your order will be shipped immediately on receipt

Made in Langstroth or Hoffman sizes at 60c per frame, f. o. b., Pasadena. Write for prices on both shallow and Jumbo sizes. Discounts given on large orders.

Booklet "B 1" describing **"MONEYCOMBS"** mailed on request.

## ALUMINUM HONEYCOMB COMPANY

FACTORY AND OFFICE
**Chester and Colorado Streets, Pasadena, California**

# FOREHAND'S THREE BANDS

## THE THRIFTY KIND

We have been breeding these queens for the market for over a quarter of a century. They are bred from the imported Italians, but by select breeding we have brightened the color and retained the good qualities of their mothers.

After years of select breeding we have built up a strain of bees that are **surpassed by none, but superior to many.** Our queens are thrifty, hardy, gentle and beautiful.

We guarantee pure mating, safe arrival and satisfaction.

**PRICES: After April to July 1**

Untested—1, $1.50; 6, $7.50; 12, $13.50; 100, $1 each.
Select untested—1, $1.75; 6, $9; 12, $16.50; 100, $1.25 each.
Tested—1, $2.50; 6, $13; 12, $24.50; 100, $2 each.
Select tested—1, $4; 6, $22; 12, $41.50; 100, $3.35 each.

**Pound Bees from April 15 to June 30**

One-pound package—1, $3; 25 or more, $2.75.
Two-pound package—1, $5; 25 or more, $4.60.
Three-pound package—1, $7; 25 or more, $6.45.
Add the price of the queen wanted.

**W. J. FOREHAND & SONS, The Bee Men**
**Fort Deposit, Alabama**

CHARLES MONDENG
Bee Keepers' Supply Mfg. Plant.
CHARLES MONDENG
BEE KEEPERS SUPPLIES

## A BIG STOCK OF BEE SUPPLIES

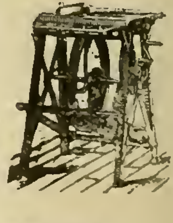
ALL BOXED, ready to ship at once—thousands of Hoffman Frames; also Jumbo and Shallow Frames of all kinds—100 and 200 in a box. Big stock of Sections and fine polished Dovetailed Hives and Supers.

I can give you bargains. Send for a new price list. *I can save you money.*

**Will take your Beeswax in Trade at Highest Market Price**

**CHAS. MONDENG**
**159 Cedar Lake Road MINNEAPOLIS, MINN.**

## BARNES' Foot Power Machinery



Read what J. E. Parent, of Chariton, N. Y., says: "We cut with one of your Combined Machines last winter 50 chaff hives with 7-in. cap, 100 honey-racks, 500 frames and a great deal of other work. This winter we have a double amount of hives, etc., to make with this saw. It will do all you say of it." Catalog and price list free.

**W. F. & JOHN BARNES**
**995 Ruby St., ROCKFORD, ILLINOIS**

## PACKAGE BEES

Prices f. o. b. here, by express only, 2-lb. pkg. bees, $4.65; 3-lb. pkg. bees, $6.65. Queens, untested, $1.35; tested, $2.50. Terms, 25 per cent with order, balance 10 days before delivery.

**E. A. HARRIS**
Albany, Ala.

**EARLY ORDER DISCOUNTS WILL**

## Pay You to Buy Bee-Supplies Now

Thirty years' experience in making everything for the beekeeper. A large factory specially equipped for the purpose ensures goods of highest quality. Write for our illustrated catalog today.

**LEAHY MFG. CO., 90 Sixth St., Higginsville, Mo.**
**or J. W. ROUSE, Mexico, Mo.**

**Established 1885**

We are still furnishing beehives made of white pine; they will last. A. I. Root Co.'s make of bee supplies kept in stock. Send for catalog giving full particulars; free for the asking. Beeswax in exchange for supplies, or cash.

**JOHN NEBEL & SON SUPPLY CO.**
**High Hill, Montg. Co., Mo.**

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CYPRESS "MARK OF
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IT'S STAMPED
ON EVERY PIECE OF
"TIDEWATER"
CYPRESS

"ALL
HEART
FOR
BEE-
KEEPERS'
USE
(Of Course)

THE MAN WHO BUYS CYPRESS MINUS THE ARROW TRADE-MARK AND THINKS HE IS GETTING

"TIDEWATER" CYPRESS

*"The Wood Eternal"*

IS EITHER EXTREMELY "SHORT-SIGHTED" OR EASILY SATISFIED, **OR BOTH.**

WISE MEN SAY "**SHOW ME**"

(THE TRADE MARK)

"ALL
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FOR
BEE-
KEEPERS'
USE
(Of Course)

TRADE MARK REG. U.S. PAT.OFFICE

**SOUTHERN CYPRESS MANUFACTURERS' ASSOCIATION**
1251 HIBERNIA BANK BLDG., NEW ORLEANS, LA., or
1251 HEARD NAT. BANK BLDG., JACKSONVILLE, FLA.

TRADE MARK REG. U.S. PAT.OFFICE

**BEE SUPPLIES**

**SERVICE AND QUALITY**

**BEE SUPPLIES**

Order your supplies early, so as to have everything ready for the honey flow, and save money by taking advantage of the early order cash discount. Send for our catalog—better still, send us a list of your supplies and we will be pleased to quote you.

**2146 Central Ave. C. H. W. WEBER & CO. CINCINNATI, O.**

**The Diamond Match Co.**
(APIARY DEPT.)

MANUFACTURERS OF
**Beekeepers' Supplies**
CHICO, CAL., U. S. A.

**Dadant's incomparable Foundation is always kept in stock. Western Beekeepers can be supplied advantageously.**

BEEKEEPERS, wherever they may be located, before deciding where to obtain supplies, should write to The Diamond Match Co. for prices, and for their Beekeepers' Supply Catalogue.

This Company are the largest manufacturers in the world who make Bee Supplies. They own their own timber lands, mills and factories, and supply goods direct from the tree to the beekeeper.

Full advantage of this low cost of production is given to the purchaser.

The Apiary Department (which is in charge of experienced supply men, who are also practical beekeepers) maintains a constant excellence of product and offers unsurpassed service.

**The Diamond Match Co.**
**Apiary Department** **CHICO, CAL., U. S. A.**

SEND TODAY FOR THIS CATALOG

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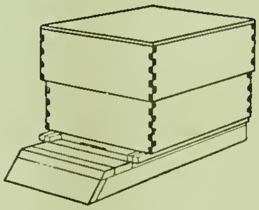
BEE SUPPLIES
1920



THE A. I. ROOT COMPANY
MEDINA, OHIO

AMERICAN BEE JOURNAL

APRIL, 1920

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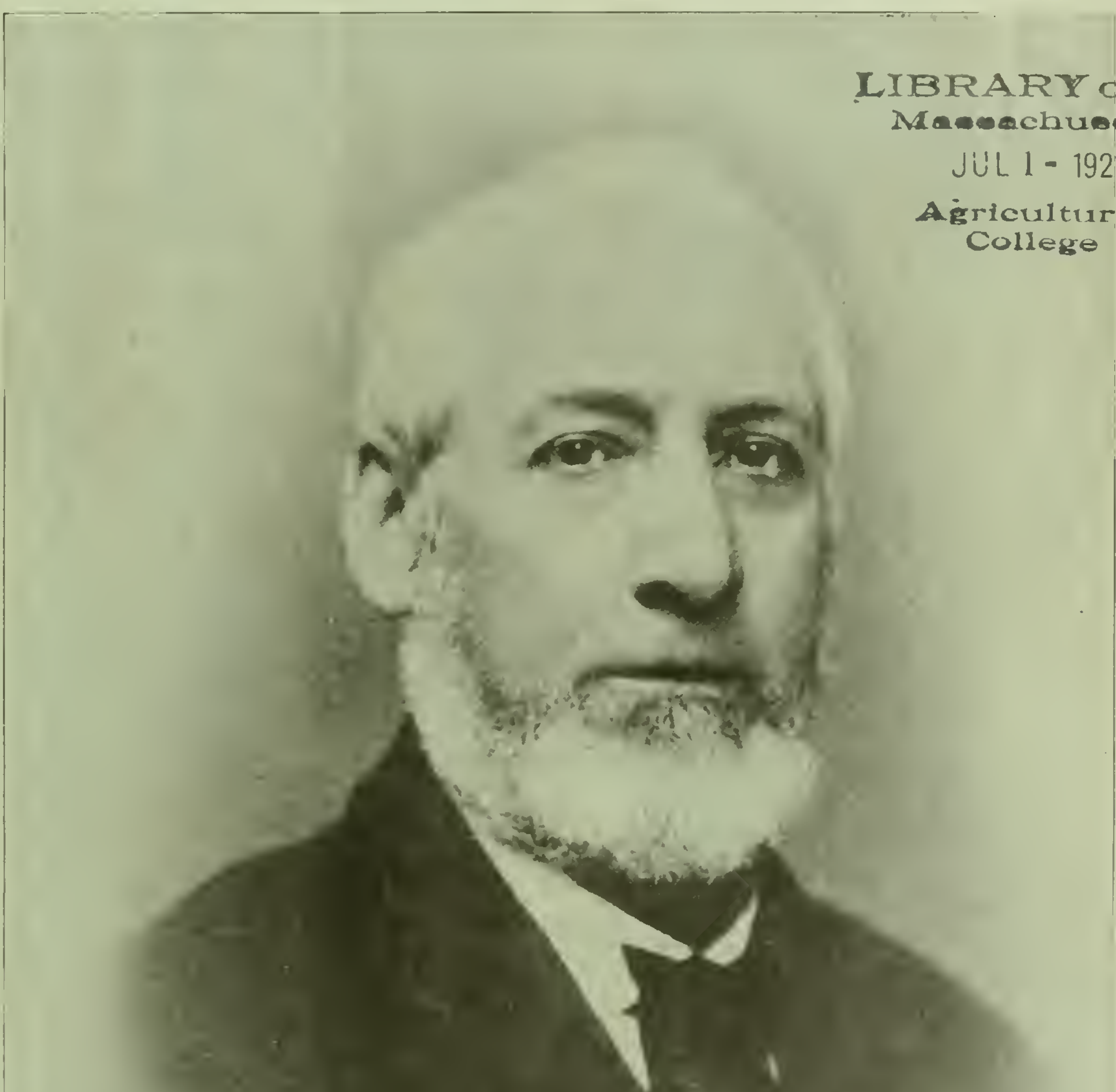


MOSES QUINBY, BORN APRIL 16, 1810; DIED MAY 27, 1875.
One of the first to engage in honey production on a commercial scale and the original advocate of the large hive.

# Order Your Bee Supplies Now

NOW is the time to check up on your hives and accessories to make sure that everything is complete and in perfect condition for the coming season. Our complete line of Bee Supplies includes everything needed by the modern Beekeepers. Besides our own exclusive articles we are distributors for the famous Lewis Beeware line, and dealers in Root's Extractors and Smokers, and Dadant's Foundations. Orders placed now can be filled promptly. Prices on many articles are sure to advance within the next few months. Send for our large 1920 Catalog today.

## *Beeswax Rendered from Old Combs*

WE pay you the highest market price for rendered wax, less 5 cents per pound rendering charge. Our special hydraulic steam wax press gets the very last drop of wax from old combs and cappings assuring you maximum profit on them. Write for full particulars.

## *Best Prices Paid for Honey*

SEND us samples of your honey and we will quote you a price equal or better than that of any other concern. We buy and sell both comb and extracted honey. Cash remitted in full the same day shipment is received.

## Send for Our Large New 1920 Catalog

THIS new catalog contains over 40 pages of every variety of Beekeeper's Supplies, including all the latest and most improved devices. It is really a valuable reference book on beekeeping accessories.

Tin Rabbets
Hives, all sorts
Extractors

Foundations, Dadant's
Root's Smokers
Excluders, all makes
Division Board

Wax Extractors

Metal Spaces
Uncapping Knives
Tin Tacks
Honey Boards

Covers for hives
Observation Hives

**THE FRED W. MUTH CO.**
*"THE BUSY BEE MEN"*

**CINCINNATI, O**

# Constructive Criticism

**Has been our watchword in office, factory, apiaries and shipping room since we started manufacturing**

## DADANT'S FOUNDATION

**over forty years ago**

¶ Any possible improvement in manufacture, packing, etc., suggested to us has been painstakingly investigated, and, if desirable, acted upon.

¶ That is why **Dadant's Foundation** is recognized by its thousands of satisfied users as most desirable and used by them in their apiaries exclusively.

¶ They are assured of a standardly uniform product; made as nearly perfect as is possible by human efforts.

¶ **Dadant's Foundation** is the result of over forty years concentrated effort and accumulated experience.

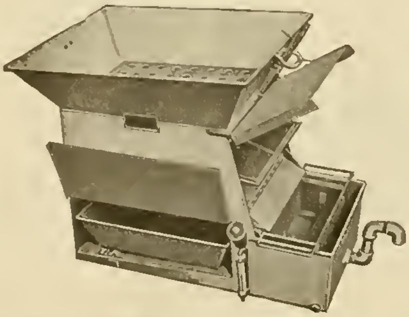
*Every inch, every pound, every ton, equal to any sample we have ever sent out*

**Ask your dealer for Dadant's Foundation, if he hasn't it, write to us**

**Catalog of bee supplies, prices on working wax into foundation, and our prices on beeswax for the asking**

## DADANT & SONS, Hamilton, Illinois

**The Severin Melter and Separator combined will take care of those cappings you have been keeping around in the way. A sticky mess.**



Clean them up as you go, and start each morning with everything out of the way. Think of having your wax ready for market direct from the uncapping knife, and the amount of honey saved over the old way has surprised many. The only melter of its kind on the market. Four improvements for 1920.

*Write for description today*

**F. J. SEVERIN, Imperial, California**
**Box 145**

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# QUEENS—FINE ITALIAN—QUEENS

## FROM SELECTED BRED-UP STOCK

Now booking orders for June delivery at following prices:

Pure mating, safe arrival and satisfaction guaranteed

| | 1 | 12 | 100 |
|---|---|---|---|
| Untested | $1.35 | $15.00 | $110.00 |
| Select Untested | 1.75 | 18.00 | 150.00 |
| Tested | 2.50 | 24.00 | 200.00 |

A few more package bees for late May and early June delivery.

**E. A. HARRIS, Albany, Alabama**

---

**Am now booking orders for Michigan-bred Queens**

## THREE BAND ITALIANS ONLY

**TESTED DISEASE RESISTORS**

**PRICES**

| | June 15 to July 15 | | | July 15 to Oct. 1 | | | |
|---|---|---|---|---|---|---|---|
| | 1 | 6 | 12 | 1 | 6 | 12 | 100 |
| Untested | $1.50 | $8.00 | $15.00 | $1.30 | $7.50 | $13.50 | $110.00 |
| Select untested | 1.75 | 9.00 | 16.00 | 1.60 | 8.00 | 14.00 | 115.00 |
| Select tested, any time after June 20 | | | | 3.00 | 16.00 | 29.00 | |
| Select day-old virgins, after June 1 | | | | .60 | 3.50 | 6.50 | 50.00 |

All queens hatched in nursery cages and any inferior ones are killed.

All queens mated in two-frame or three-frame nuclei. No baby nuclei in yard.

Books opened April 1. If you are going to need **good** queens this summer now is the time to order them.

**D. A. DAVIS, Birmingham, Mich.**
**216 Greenwood**

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THAGARD'S ITALIAN QUEENS
**Bred for Quality**

| | |
|---|---|
| Untested | $1.50; 6, $7.50; 12, $13.50 |
| Select untested | $1.75; 6, $9.00; 12, $16.00 |

I guarantee pure mating, safe arrival and perfect satisfaction. Circular free.

**V. R. THAGARD, Greenville, Ala.**

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## ELECTRIC IMBEDDER

**Price without Batteries $1.25**
Not postpaid.

Actually cements wires in the foundation. Will work with dry cells or with city current in connection with transformer. Best device of its kind on the market.

**For sale by all bee supply dealers**

**Dadant & Sons,** Manufacturers HAMILTON, ILL.

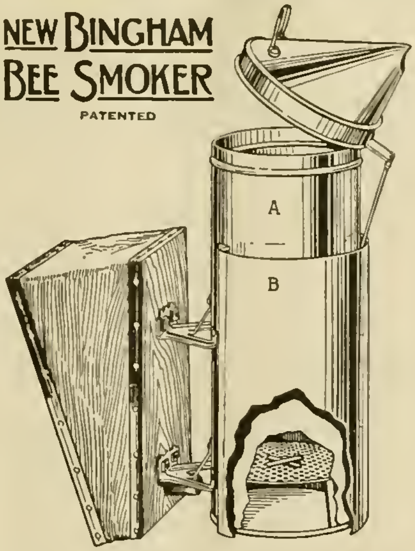
---

BEE SONGS, 2c EACH

I will mail copy of **"Songs of Beedom,"** having 10 bee songs, for only 20c; 7 Teddy Bear souvenir postal cards for 10c; J. J. Wilder's book, "Southern Bee Culture," 30c; Danzenbaker 3½ in. Bee Smoker, 90c. All postpaid at prices given. Address GEORGE W. YORK,, 1128 W. Glass Ave., Spokane, Wash.

# NEW BINGHAM BEE SMOKER

PATENTED

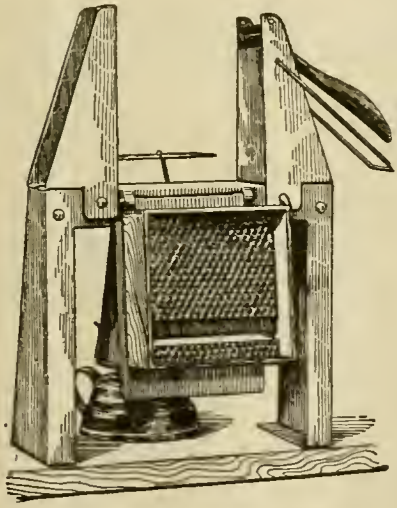


The Bingham Bee Smoker has been on the market over forty years and is the standard in this and many foreign countries. It is the all important tool of the most extensive honey producers in the world. It is now made in five sizes.

| Postage extra. | Size of stove | Shipping weight. | Price. |
|---|---|---|---|
| Big Smoke, with shield | 4x10 inch | 3 pounds | $2.50 |
| Big Smoke, no shield | 4x10 inch | 3 pounds | 2.00 |
| Smoke Engine | 4x 7 inch | 2¼ pounds | 1.50 |
| Doctor | 3½x7 inch | 2 pounds | 1.15 |
| Conqueror | 3x 7 inch | 1¾ pounds | 1.00 |
| Little Wonder | 3x5½ inch | 1½ pounds | .80 |

Smoke Engine or Doctor in copper, $1 extra.

The Big Smoke has just been produced in response to a demand for a larger size smoker, one that will hold more fuel, require filling less often, from extensive bee handlers. The shield designated by the letter "B" in the cut above, is designed as a matter of protection from the hot fire pot. Many hold the smoker by the bellows, between the knees, when at work, and the shield will prevent burning of the trousers or one's legs.



The Woodman Section Fixer, a combined section press and foundation fastener, of pressed steel construction, forms comb-honey sections and puts in top and bottom foundation starters, all at one handling. It is the finest equipment for this work on the market.

## TIN HONEY PACKAGES

2 lb. Friction Top Cans in cases of 24.
2 lb. Friction Top Cans in crates of 612
2½-lb. Friction Top Cans in cases of 24.
2½-lb. Friction Top Cans in crates of 450.
5-lb. Friction Top Pails in cases of 12.
5-lb. Friction Top Pails in crates of 100.
5-lb. Friction Top Pails in crates of 203.
10-lb. Friction Top Pails in cases of 6.
10-lb. Friction Top Pails in crates of 113.

### SPECIAL PRICES

Crates of 100 five-pound pails, $8; crates of 200 for $15.

Crates of 100 ten-pound pails at $12.50 Ask for quotation on 60 pound cans.

Shipments made from Michigan, Ohio, Illinois and Maryland factories.

## A. G. WOODMAN CO.

**GRAND RAPIDS, MICH., U. S. A.**

## ITALIAN QUEENS

The Old Reliable Three-Banded Italians. The best allround bee to be had. Queens ready to mail April 1. Will book orders now. Will guarantee safe arrival in United States and Canada. Prices for April and May:

Untested,, $1.50; 6, $8; 12, $15
Tested, $2.25; 6, $12; 12, $22.
Select tested. $3 each.

Descriptive circular and price list free.

**JOHN G. MILLER,**
723 C Street, Corpus Christi, Texas.

## QUINN'S QUEENS OF QUALITY

Have no superiors—"There's a reason." Are Mendelian bred, good qualities accentuated. Gray Carniolans, Gray Caucasians, most gentle of all, prolific, hardy, vigorous, disease-resistant, white comb builders—they deliver the goods.

ITALIANS, 3-banded, line bred, pedigreed; need no boosting; they speak for themselves.

**CHAS. W. QUINN, Sabot, Va.**

## HONEY MAKING—MONEY MAKING ITALIAN

Queens first ready for mailing April 15.

Untested, $1.50 each; 25 or more, $1.35.
Tested, $2.50 each; 25 or more, $2.25.
Select tested, each $3.00.

I also furnish nuclei and have a limited amount of bees by the pound to sell. Circular free.

**R. V. STEARNS, Brady, Texas**

## FOR SALE

200 two-frame nuclei ready for delivery from May 1 to 20. $5.50 each with young untested queen. Where tested queens are wanted $6.50 each

**COTTON BELT APIARIES**
**ROXTON, TEXAS**

## BEE SUPPLIES

We carry a complete stock of supplies at all times, and can make prompt shipments. Our prices will interest you.

**Send Us Your Inquiries**
**A. H. RUSCH & SON CO.**
**Reedsville, Wis.**

## HERE THEY ARE MR. BEEKEEPER

**at Newark, Wayne Co., N. Y., ready to answer your call. The best of everything. Just read this list:** Lewis Beeware, Sections, Shipping Cases, Frames, Hives, Hershiser Wax Presses and other supplies, Dadant's Unexcelled Foundation, all standard weights and sizes; also the Electric Wire Imbedder, Bingham Uncapping Knives, including steam heated, with oil stoves and generators. Bingham Smokers, all sizes, with geunine leather bellows; Root's Extractors, all sizes of hand and power machines; Bee Books, written by all leading authors in beedom.

All sizes of Friction Top Pails, and also 60-lb. Cans, new and second hand. Also Cement-coated Nails for nailing beehives and supplies; and all sized spools of Tinned Wire, Bee Brushes, Feeders, Queen-Rearing Cages, Bee Gloves and Capping Melter, and all practical supplies you will need.

A market for your honey or wax and a plant to render your old combs and cappings.

Over 1,000 beekeepers took advantage of this service station at Newark in 1919 for the first time. Now all together for a greater 1920.

New catalog free. Our discounts will save you money.

**THE DEROY TAYLOR CO., Newark**
**(Wayne Co.) New York.**

## BEESWAX WANTED

We require approximately 50 tons of beeswax during the next three months, to take care of the enormous demand for SUPERIOR FOUNDATION. We are paying highest cash prices, and an extra allowance of several cents per pound when exchanged for foundation, bee supplies or honey cans. Write for prices and shipping tags, stating quantity.

### SUPERIOR FOUNDATION

Get our prices on your foundation requirements for the season. We maintain the same high quality in every pound we manufacture. SUPERIOR FOUNDATION assures SUPERIOR RESULTS.

### BEE SUPPLIES

We carry a complete stock of bee supplies and honey cans, and can fill your entire order. Prices on request.

**SUPERIOR HONEY CO., Ogden, Utah**
**(Manufacturers of Weed Process Foundation)**

**QUEENS**

## PACKAGE BEES

**QUEENS**

Did you read Prof. H. F. Wilson's write-up in Gleanings, March issue, in regard to the packages of bees and queens he received from me last year? Notice he said some of those packages of bees and queens received in May gathered 150 pounds of honey. That speaks for itself in regard to the quality of my **Queens.** The 2-pound packages of bees and queens I shipped Mr. David Running in 1917 gathered 140 pounds of honey (He was then President of the National Beekeepers' Association). Have booked all the orders I can guarantee shipping on time for April, but send for **Free Circular** for later shipping, which states our guarantee; also gives prices on bees by parcel post, nuclei, etc., 3-banded and Golden queens. Have secured the best queen men obtainable, and we are prepared to turn out 6,000 **Queens** per month. They do nothing but take pains in rearing the best of queens. Careful inspection before shipping. Have an entirely separate crew for shipping bees, etc.; 20 years a beekeeper.

| Prices F. O. B. Here by Express | Queens |
|---|---|
| 1-lb. pkg. bees $2.40, 25 or more $2.16 | Untested $1.50 each, 25 or more $1.35 |
| 2-lb. pkg. bees $4.25, 25 or more $3.83 | Select untested, $1.65 each; 25 or more, $1.50. |
| 3-lb. pkg. bees $6.25, 25 or more $5.62 | Tested $2.50 each, 25 or more $2.25 |
| Add price of queen when ordering bees. | Select tested $3.00 each |

**NUECES COUNTY APIARIES, E. B. AULT, Prop. CALALLEN, TEXAS**

## Read "THE BEEKEEPER"

The only Canadian bee publication. Keeps beekeepers closely in touch with Apicultural conditions in Canada. It is the official organ of the Beekeepers' Associations for the three provinces—Ontario, Manitoba and New Brunswick. Beekeeping and horticulture are effectively combined to make a live, attractive and practical publication.

**Price, postpaid, $1 per year**
**United States, $1.25 Foreign, $1.50**
**Send for a free sample copy**

**The Horticultural Publishing Co., Ltd., Peterboro, Ontario**

## EARLY NUCLEI FOR SALE

I will have 200 two and three frame nuclei for shipment in March and April and desire to ship to parties wanting 25 or more nuclei. Two frame nuclei, $4.00 each, three frame nuclei, $5.00 each without queens. When queens are wanted, add $1.50 for untested and $2.50 for tested queens. Orders must be booked early and a deposit made of 25 per cent of each order. No personal checks accepted.

**C. S. ENGLE, Rio Hondo, Texas**

# *Our Marketing Service*

*Why Not* **"FOSTER"** *Your Selling*

Our service in this regard extends to honey marketing, market bulletins, special advances on honey crops and honey in storage, selling bee supplies at a fixed, low profit, cash for your crop when shipped, pools for those that so choose, etc. Service is what you want, and we stand ready to serve you. Our organization is full of pep. Our purpose in doing business is only twofold. First: To build up a great national demand for and to educate the people to honey. Second: To make for bigger and more profitable beekeeping in our territory. By a sales organization we can accomplish the first purpose. By the service that we can render you through the various branches of our organization we can help accomplish the second purpose.

We would like to enter into a marketing agreement with beemen in the Rocky Mountain territory. You attend to the production and we will do your selling. If you are in our territory let us hear from you. We know that we can serve you satisfactorily. We absolutely will not solicit any business unless we know that we can handle it. Our distributive methods—such as advertising, demonstration and salesmen—will be increased in size as we get more honey lined up. We are confident that our marketing service fills a need. We can work together better than we can work apart, and all our work should be towards greater and more profitable honey production and more national distribution. We want your business because we know that we can take care of it properly.

# *OUR SUPPLY SERVICE*

*Why Not* **"FOSTER"** *Your Buying*

Give us a chance to figure with you on your supply orders. We have the goods to deliver and have established a branch at Delta, Colorado, to help take care of the business. Gale H. Patterson is our local manager at Delta, and he also stands ready to serve you. We have put a principle in our business—"Service First" Ask the men who have been dealing with us. Mr. Wesley Foster, who is President of our company, did not let a beekeeper who was dealing with him carry over any honey in 1917, 1918 or 1919. Rather than judge us by our promises, judge our ability and the sincerity of our intentions by the past record. We have unlimited confidence in beemen. We want to win your confidence. We want to justify your confidence in us.

We want to publicly express our appreciation of the many customers who have dealt with us so satisfactorily in the past and who are coming back to us with their valued business this year. You may refer to the National State Bank of Boulder, Colo., or to any Mercantile Agency as to our financial strength and business integrity. We know the business from all sides, as we are producers, packers, shippers and buyers of honey and dealers in bee supplies. We always have the time to help you with your problems.

**"FOSTER"** *Your Business*

**THE FOSTER HONEY & MERCANTILE CO.**

**BOULDER, COLORADO**

# A "BEEWARE" LINE FROM MILL TO YOU

UP IN THE NORTH WOODS SNOW AND ICE ARE MELTING,
APRIL'S SUN IS TURNING RIVULETS INTO TORRENTS.
HUGE PINE LOGS ARE FLOATING DOWN TO THE MILLS,
THERE THEY ARE CUT INTO CLEAN, WHITE LUMBER,
ONCE "MONARCHS OF THE FOREST"—NOW LEWIS "BEEWARE."

READ YOUR "BEEWARE" CATALOG COVER. YOUR DISTRIBUTOR'S NAME IS THERE. WRITE HIM TODAY. HIS STOCK IS READY.

SOUTHERN BEEKEEPERS—Don't forget your "Beeware" branch, 10-12 Front Street, Memphis, Tennessee. Also we are glad to announce a new distributor at Charleston, W. Va.,—The Kanahwa Seed Co., 617 Virginia St.

**LOOK FOR**

BEWARE
WHERE YOU BUY YOUR
BEEWARE
WATERTOWN WIS U.S.A.
MAKES THE FINEST

**THIS MARK**

Have you read "How to Manage Bees in Spring?" It costs 5c. All 14 booklets mailed for 70c.

**BRANCHES AND DISTRIBUTORS EVERYWHERE**

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## G. B. LEWIS COMPANY, WATERTOWN, WISCONSIN

**MAKERS OF BEEWARE**

AMERICAN BEE JOURNAL

VOL. LX—NO. 4 HAMILTON, ILL., APRIL, 1920 MONTHLY, $1.00 A YEAR

# SPRING MANAGEMENT

BY C. P. DADANT

TO speak of spring management, on April 1, to beekeepers in Texas, or California, or Florida, is belated advice. But in our northern and middle States, the bees barely get out of winter's confinement by the end of March, and before that time it is hardly advisable to disturb them, unless we have not done right by them and have left them, in the fall, with insufficient stores. Usually there is enough to last them till April, when the increased amount of breeding will require more consumption of food. It is also in March that colonies are usually taken out of the winter repositories.

The cleaning out of the winter's refuse is usually left for the bees to do. With strong colonies, well sheltered, or after a mild winter, this is probably as good a way as any. But when the bees have suffered much and a handful or more are lying on the bottom, it is a mistake to leave this work to them, when we can do it so much more promptly. Listen to the old teacher, Dzierzon:

"The dead bees lying on the floor and the wax dust (cappings) are removed. The latter is not thrown away, but parted from the dead bees by a little sieve, because it contains the purest wax. If the carrying out of the dead bees is cared for by the bees, many living bees are lost through it, by falling in the water or on the cold ground, and chilling before they can disengage themselves from their burdens. It is preferable to save them this labor, which the beekeeper can do in a few seconds."

Time is money, and most beekeepers will think little of saving the light dust of beeswax made from the cutting down of the cappings. Yet this old-country process produces quite a little good wax.

At the same time a soiled hive or bottom-board may be exchanged for a clean, dry one. We have sometimes saved a weakened colony by a little attention of this kind. If we use a division-board, it will be well to follow the advice of Professor Cook, another of our old-time advisers:

"I have never yet lost a colony by spring dwindling. Crowd the bees onto a few frames; give them abundant food; cover warmly above and at sides of division-boards with generous bags of sawdust, and leave these on the hives if the weather remains cool."

It is true that this requires later visits to enlarge the space again for brood when the colony becomes strong and the weather is warm. Beekeepers with several apiaries cannot do much of this. Yet it pays for the trouble.

See to it that your bees have plenty, so they may rear brood without stint. Be sure they are in easy reach of water. Water, as far as we know, is not needed by bees, except to prepare the food for the larvæ or to dilute sweets that are too thick for consumption. But spring is the time when most of it is used, and we lose more bees from flying out in cool days after cold water than in any other way. If you must feed, feed warm, well diluted food. One of the best beekeepers of Michigan, Mr. Bartlett, produces an artificial flow which induces the bees to breed without actually supplying them with much stores. He mixes sugar with

The friction top pail with small holes punched in the cover makes the best feeder for bees. For use it is inverted directly above the cluster, on top of the frames.

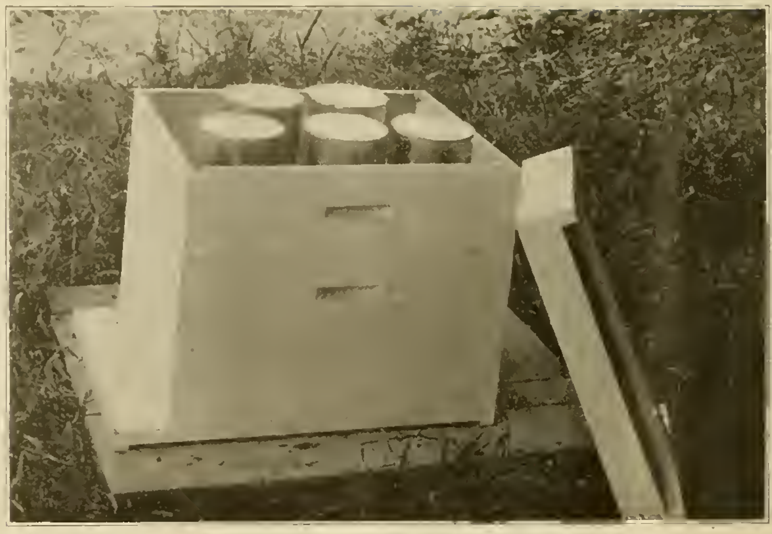
water in the proportion of about a pound to the gallon, producing a sweet containing over 80 per cent of water. This supplies the water. It is fed outside, when the weather is favorable. Feeding in the hive is our preference, with a less diluted sweet.

The best way to feed, however, is to supply the bees with ample stores in the combs. As that peerless teacher, George S. Demuth, urges in his lectures, let the feeding be automatic, by supplying the bees with enough honey so that they may have a surplus with plenty of breeding room until the crop comes.

Still, stimulative feeding has proven good in many instances. But it requires good judgment and must not be indulged in at inopportune times. Mr. Langstroth wrote: "I always feed my bees a little, even if I know that they have enough and to spare. There seems to be an intimate connection between getting the honey and the rapid increase of breeding, in a hive. The taste of something sweet, however small, exerts a very stimulating effect upon the bees."

Circumstances should guide our actions in this matter of feeding. Looking back at the writings of the old masters, we find many instances of the desirability of keeping the bees encouraged and with sufficient stores to breed rapidly. Bevan quotes Feburier in this regard. He says:

"The weather in February, 1810, having been very mild, the bees about Versailles were in a state of great forwardness with their brood; but the temperature afterwards became cold, and continued so, till the store of honey in some hives was exhausted, and nearly so in all. Two neighbors of his adopted opposite lines of conduct on this occasion, one fed his bees liberally, the other not at all; whilst Feburier himself, with an ill-judged economy, adopted a middle course. The result was remarkable and highly instructive. The neighbor who fed not at all lost three-fourths of his families. Out of 22 stocks Feburier lost two, the remainder swarmed very late, and some of the swarms were very feeble; whilst the liberal feeder saved all his old stocks, and his first swarms issued so early as to be succeeded by strong after-swarms."



Tin pail feeders in empty super. The best method of feeding syrup.

The reader whose bees are short will wonder how he is to do when sugar is scarce or not to be had. There is still one remedy. Your colonies are not all of the same weight. Some are richer than others and may be able to spare a little to bring the others to fruit bloom. Be sure and let none of your colonies starve.

Let us bear in mind that we should secure strong colonies for the honey crop, or, as Mr. Demuth so happily put it: "We must raise our working force **for the honey crop, and not on the honey crop."** It takes about 35 days for the egg just laid to become a field worker. So the breeding of the bulk of our colonies should begin on a large scale at least 35 days before the usual honey crop begins.

Weak colonies can be confined to six frames in early spring by the use of a tight-fitting division board.

Let us avoid raising drones, except in the colonies which we desire as reproducers. We can go back a great many years and find some of the best teachers in agreement with us on this point. Samuel Wagner, the early pioneer and founder of the American Bee Journal, wrote in April, 1861:

"The beekeeper's effort should constantly be directed to the suppression of drone-brood, for notwithstanding his utmost vigilance, there will be always many more drones produced in his apiary than are needed—unless queen-raising be a principal part of his business. Where honey is his object, he should sedulously foster the rearing of workers, so that, at the favorable moment, when pasturage is abundant, he may have at command a numerous body of energetic laborers, instead of having his hives crowded with a horde of worthless consumers."

Since the invention of comb foundation, there is no excuse in rearing a large number of drones, except in the hives in which we choose to have them. We will always have a few, even in hives where we try to prevent their production. But 200 to 300 drones in a hive is a trifle. It is the production of thousands which is a waste. Let us prevent their coming by the very practical method of removing as much as we can of the drone comb, in early spring, before they are produced, and replacing it with worker comb. We should always have some worker combs on hand for emergencies.

Beekeeping is a business of details. Let us attend to the details. Learn what is to be done, and do it in time.

## Saving a Weak Colony in Spring

By F. Dundas Todd

SEVERAL times in the past ten years I have tried to save a weak colony in spring by the Alexander method, but invariably without success, so I became convinced it was not for me. Last spring, at the first examination, about the end of April, I found two colonies that had no more than 150 bees apiece to support the queen. One had plenty of stores, but the other was starving. As the honey production of both colonies the previous year had been good, I felt I ought to try to save the queens. Now, I see my own bees on Saturdays, and usually leave the apiary about 4 or 5 o'clock, so I had to fit myself to the conditions. I decided to place each of the weak colonies above a strong one with wire mosquito netting between, this being supported on a queen excluder. This was done, and a frame with a small batch of sealed brood, but no adhering bees, given to each. The one short of stores was provided for by giving it a frame with honey. No provision was made for flight.

The following Saturday I found many of my old bees had died, but as many young ones had hatched out. I gave each another frame of sealed brood; this time from the hive below. A week later, feeling that the odor of the hive would be uniform, I carried each old hive to a new stand and left the upper story with another frame of brood and adhering bees on the old stand to catch the flying bees.

The queens were saved all right, and I wish I could add that each colony gave me a bumper crop, but they did not; in fact they did not even get winter stores. The season was very dry, poor for building up, and as strong nuclei made no better showing, I am not in a position to blame the queens. The longer I keep bees the less inclined I get to bother with weak colonies, so prefer to put them out of business and get them off my mind. Not alone in the bee world have I seen brands plucked from the burning that, so far as their usefulness was concerned, were not worth the bother.

**A Bee Fence**

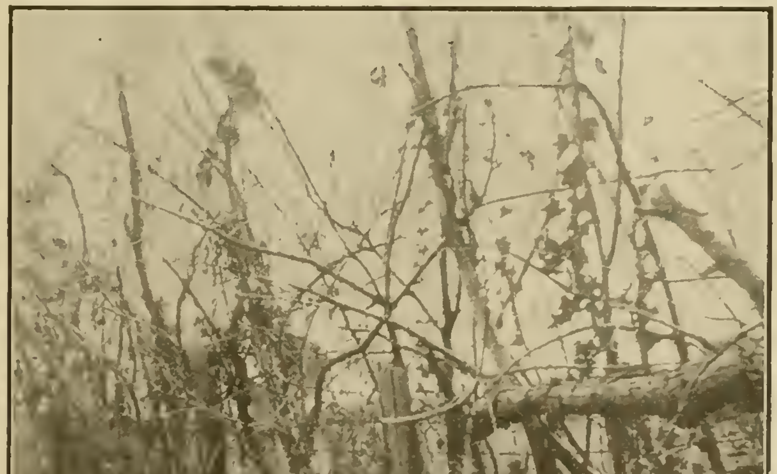
Where apiaries are kept close to machine-worked fields there is frequently complaint that the bees sting the horses when at work. The best way to avoid such trouble is to have a high fence to compel the bees to rise high in the air when leaving the apiary or returning with their loads. The picture shows an arrangement used by Herman Rauchfuss, of Colorado. He has woven brush into the barbed-wire fence beside the apiary, with the result that the bees pass over the teams in the adjoining field at such a height that there is seldom any annoyance to the horses.

## The National Meeting

The National Association met at Buffalo, March 9-11, approved the action of the Kansas City meeting of January 6, organizing an "American Honey Producers' League," and dissolved itself after voting to merge the Association into this League. Previous to this action it approved the decision of the Association of New York Societies, which also joined the League.

We trust that those who are inclined to criticise the organization of an "American Honey Producers' League" will read its contemplated functions in the "League Bulletin," which is being sent freely throughout the country. Like the citrus fruit men, the honey producers of America need to brace against each other, and it is not sufficient to organize local or state honey producers' associations. These must be connected with each other, though independent from one another, in order to secure the benefits of union.

This is not the first time that the honey producers try to join hands. Other attempts have been failures. But we are getting nearer and nearer to the goal. If this should fail, another would take its place shortly. So do not pass it by without careful investigation. Information can readily be secured by addressing the Secretary, Chas. B. Justice, 318 Investment Bldg., Los Angeles, or E. G. Le Stourgeon, President, San Antonio, Texas.



Brush woven into a barbed-wire fence to compel the bees to rise above the surrounding fields. Annoyance to horses working in the fields near the apiary can often be prevented in this manner.

## Wisconsin's Crop

The Wisconsin Crop Reporting Service estimated that there were produced in Wisconsin in 1919, 4,834,000 pounds of surplus honey, of which 18 per cent, or 826,000 pounds, was comb and 4,008,000 extracted. This is an average of 54 pounds per colony, comb honey yielding 34 pounds per colony and extracted 61 pounds. Of the 90,000 colonies in the State in 1919, 37 per cent, or 24,300, were used in the production of comb honey and 73 per cent, or 65,700 in the production of extracted honey. The census of 1910 reports 95,638 colonies. This number decreased rapidly until within the last few years, but the culture of bees is rapidly increasing at the present time.

The total value of the 1919 honey crop of Wisconsin is estimated at $1,207,730, of which $261,842 is for comb honey and $945,888 for extracted. Average price received by producers of comb honey was 31.7c per pound; of extracted, 23.6c per pound. On January 1 the average price of comb honey was 32.6c; of extracted, 24.8c.

The average value per hive of bees is estimated at $8.50, a total value of $765,000 for the 90,000 colonies in the State. KENNETH HAWKINS.

## Premiums to be Offered at Mid-West Horticultural Show

We learn from Professor Paddock that beekeepers will be recognized by the management of the next Mid-West Horticultural Show, to be held at Council Bluffs, Iowa, next fall. Special premiums will be offered for county association exhibits. Since the Mid-West is one of the biggest exhibitions of fruit to be held in America, it is a very favorable opportunity for the beekeepers to bring their product to the attention of the public. Beekeepers can do no better advertising than by well arranged exhibitions at fairs, etc. By making plans early in the season it is not difficult to prepare an effective exhibit. If the beekeepers of the Middle West respond with a display worth while this year, it is probable that larger premiums will be available later.

## Large Hives

"With the little British Beekeepers' Association frames, two brood chambers are essential to secure a really effective working force of bees at the right time. The other way is only playing at beekeeping."—S. H. Smith, of Cambridge, England, in "Intensive Beekeeping for Honey Production."

AMERICAN BEE JOURNAL

Established by Samuel Wagner in 1861

The oldest Bee Journal in the English language.

**Published monthly at Hamilton, Illinois.**

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THE STAFF

| | |
|---|---|
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## THE EDITOR'S VIEWPOINT

### Caucasian Views

Some of our new subscribers ask how we manage to secure, under present conditions, views of apiaries and bee transportation in the Caucasus, such as were shown on our cover page in March.

In 1917, just before the United States entered the world war, we received, as a compliment, from the Caucasian Beekeepers' Association, with headquarters at Tiflis, an album of some 50 views of apiaries of old and new style. The professor who sent them to us, C. A. Gorbatcheff, stated that they wished to show us, not only the progress being achieved, but also the different styles of hives which would soon be abandoned and would then have only an ethnographic interest for the modern beekeeper. We have already given a number of these views, but still have a number to give, thanks to the courtesy of the Caucasian Beekeepers' Association.

These views cover beekeeping in the provinces of Daghestan, Elizabethpohl, Baku, Kutais, Chernomoskaya, Tersk, Batum, Lenkoran, Erivan and especially Tiflis, all in the Caucasus.

The war has sadly upset communications. Copies of the American Bee Journal, mailed to Professor Gorbatcheff in 1918, and since that time, have been returned to us on account of the impossibility of delivery. It is time that commercial and literary exchanges be again resumed, with the entire world.

### Selling Honey

Our readers will find in this number the account of a remarkable selling campaign, in which 158,000 pounds of honey was sold, through the New York Globe. This was extracted honey, granulated. We did not insert this for the purpose of urging beekeepers to follow this method, for if it were followed the jobbers would stop handling honey and we would be forced to sell all our honey in that way, which is out of the question. We need the jobber and the retailer. But the account of this remarkable sale gives clear evidence that there is ample room in America for all the honey we can produce, granulated honey at that, and that the only requirement is proper distribution.

### Good Samaritan Fund For Franco-Belgian Help

| | |
|---|---|
| Total of previous lists | $618.60 |
| Wm. Sandoz, Peters, Neb. | 2.50 |
| J. B. Holsinger, Johnstown, Pa. | 1.00 |
| Harold Current, Dunkirk, Ind. | 1.50 |
| A Beekeeper, Minnesota | 2.00 |
| Mrs. C. O. Bruno, Rockford, Ill. | 1.00 |
| Harry J. Nelson, Ames, Ia. | 5.00 |
| Total | $631.60 |

Received later—W. M. Mallory, Batavia, N. Y., $10.

| | |
|---|---|
| Henry C. Nichol, St. Paul | 1.00 |
| H. L. Hart, Yakima, Wash. | 5.00 |
| A. Etienne, Ottawa, Ill. | 1.50 |

Shortly before the issue of our March number, a request came for the sending of the funds at current exchange rates, so the exchange was made and the money sent. It brought, all told, 8,548.37 francs. It was forwarded at once.

At a similar rate of exchange, the goods subscribed and the queens would figure up about 13,500 francs, making a grand total of near 22,000 francs.

We will expect to make some statements as to the use of the goods and money, when the European committee can give them to us. We thank our contributors, on behalf of our suffering friends across the sea.

March 10, 1920.

### In Australia

The December number of the "Australian Beekeeper" is very interesting. Those "Anzacs" are progressive. They read our books and our magazines, while we barely think of them as existing at all. So it seems they would get ahead of us some time. Those of our readers who have followed the articles on "Beekeeping in Australia," by Tarlton Rayment, in the American Bee Journal, have found out that country, in some parts at least, is a bees' paradise.

It is quite interesting to read of bees swarming in December and going into winter quarters in June, for they have their winter when we have summer, and vice versa. We wish our Australian cousins good crops.

### Good Samaritan and Other Funds

At the Buffalo meeting, a letter was read from C. W. Aeppler, of Wisconsin, enclosing another from the editor of "Des Bienenvater," of Vienna, Austria, stating that they were on the verge of starvation and begging for food orders, to be sent from America. It is now possible, through the management of Hoover, to send orders for a number of different articles of food, to starving Vienna. The appeal stirred the generous feelings of the members present at the meeting, not only towards our late enemies, the Austrians, but also towards the Franco-Belgian. The writer was appointed a committee of one to receive the subscriptions, and a fairly long list was made on the spot.

We will not give the detail of the remittances this month, for lack of room. Suffice it to say that the amounts subscribed there and received also through other channels have enabled us to send a draft to the Franco-Belgians for an additional sum of 1,525 francs. Four $10 food orders have been secured for the Viennese editors, Messrs. Alois Alphonsus and Franz Richter, of the "Bienenvater."

A subscription of $52 was received by Dr. Phillips, from the Riverside County Beekeepers' Club for the Good Samaritan Fund, and more is promised. More is also coming from different sources. Let the good work go on.

## A Remarkable Selling Campaign

**How a New York Newspaper Has Sold 79 Tons of Honey in Sixty-Pound Cans Direct from the Car to the Consumer.**

ONE of the most remarkable campaigns for selling honey direct to the consumer has recently been carried on by the New York Globe. Since the memorable shipment of ten cars of honey by the late J. S. Harbison from his apiaries in California to the New York market in 1876, there has been nothing to equal it in calling the attention of the public to the value of honey as food and to disabuse the public of the prejudice against honey in the candied state. A few such campaigns would create a market for honey in sixty-pound cans that would take the present supply direct to the consumer in the most economical way possible. This campaign has resulted in hundreds of families getting a liberal supply of honey at practically the wholesale price, while the producers have been able to sell direct at a saving. Of course no account has been made of the cost to the newspaper conducting the campaign. The good will of the readers of the publication will probably be considered a sufficient compensation.

Alfred W. McCann, a member of the staff of the New York Globe, met a beekeeper, Joseph J. Anderson, of Idaho, once upon a time. Just how this chance meeting led to the distribution of honey by the carload, to the readers of the paper to which McCann is attached, is a mere matter of detail. It is sufficient to state that McCann is a newspaper man with a vision. When the recent scarcity of sugar, or manipulation of the market, or whatever cause raised the price to unheard-of levels, the New York newspaper man remembered his honey-producing friend in the far west. Two and two sometimes make more than four. In this case a newspaper with a vision and a beekeeper who was alive to a real opportunity saved the consumers of New York City several thousand dollars on the price of several cars of the finest white honey, and incidentally demonstrated the weakness of our present system of distribution.

On the front page of the Globe, on January 5, appeared an announcement that candied honey from Idaho, in sixty-pound cans, would be delivered to consumers within fifteen miles of the city hall in New York City, at 23 cents per pound, the price at which sugar was then retailing. Within five days orders were received for more than forty tons of honey The man who says that the consumer will not buy, except in the small container, has another guess coming. The New York Globe has demonstrated that the consumer will buy in larger quantity if we make it to his interest to do so. We quote the following from that publication under date of January 10:

"It is time the honey industry appreciated the fact that, as now conducted, the honey business itself is the greatest enemy of the bees and beekeeper.

"Nothing so discourages honey consumption as the profiteering prices at which, in silly little glass packages, this most delectable of all sweets is peddled out to the consumer. Nothing so encourages the manufacturer of substitutes.

"What a lesson to the honey trade! If people will buy 84,240 pounds of honey in sixty-pound tins in three days , how much honey do you think would be bought if it could be obtained in ten, or even twenty-pound tins?

"Everybody cannot buy sixty pounds of honey, and I am thinking of the millions of buyers who are deprived of a share in this orgy of innocent delight for no other reason than their inability to afford such luxury in wholesale lots. It is a crime to keep them from generous quantities of pure candied honey at a decent price solely because the honey packers make their 300 per cent profit by converting the solid honesty of the comb into a fluid, artificially achieved, that can be sold at absurd prices in petty little dribs through the instrumentality of glassware that subsequently finds its way to the dump.

"The whole system is wrong and the Globe's extraordinary experience in connection with the enthusiastic response of honey lovers to the opportunity now presented demonstrates the incalculable benefits to be derived by the public through the agency of common sense merchandising.

"Hundreds of millions of dollars could be saved annually by the general adoption of this method of distribution in the sale of food necessities. The saving in money would be insignificant in importance compared with the general improvement in public health that would inevitably follow.

"Millions of children today consume the craziest kind of table syrups in enormous quantities simply because they are supposed to be cheap as compared with the price of honey. Yet honey, if honestly sold to the plain people, would be even cheaper, despite its infinite superiority, than any chemical contraption ever compounded.

"Every now and then, as things now go, the average child participates in a few teaspoonfuls of the contents of a little five-ounce tumbler of honey costing all the way up to $1.50 a pound. If the price were what it should be, instead of a few teaspoonfuls once in a while, the growing child would eat regularly big, white, sticky chunks of pure candied honey, obtaining at least three times as much as can now be purchased in fancy, inedible glass containers, at the same price—three times as much and twice as good."

There seems to be no limit to the amount of honey the public will buy if it is offered in convenient form at an attractive price. Through the kindness of readers of this Journal we received several copies of the New York paper and were thus kept informed as to the progress of the campaign. The issue of the Globe dated February 5, just a month later than the first received, stated that 158,000 pounds, or 79 tons of honey had been sold direct to consumers in sixty-pound cans. If it had been available in ten-pound cans the quantity would have been greatly increased, but 60 pounds was the smallest quantity offered to any purchaser. Since the delays in delivery through storms and other contingencies made it impossible to secure delivery of the cars as expected, hundreds of consumers were unable to get their orders filled. Some orders had been received together with cash in payment more than a month before the honey arrived from Idaho.

A final feature of special interest was the distribution of 16,000 pounds of honey by the Globe to 26,668 orphans, waifs and other poor children, many of them blind and crippled. This latter amount represented the profits of the newspaper on the transaction, and hundreds of little children who had never before tasted honey had the treat of their lives.

The beekeeping industry owes a vote of thanks to the New York Globe and to Alfred W. McCann for demonstrating that the public is ready to buy honey in quantity and that people are not afraid of candied honey when its real nature is explained to them. Joseph J. Anderson is to be congratulated upon his prompt co-operation with the newspaper which has resulted in a demonstration of a practical way to sell honey in quantity, direct to the consumers. If co-operative organizations of large producers will act upon this suggestion there will be no trouble in disposing of next year's crop at a profit to the producer and a big saving to the customer. F. C. P.

## An Interesting Distinction

Mr. Ernest E. Kirkham, of North Carolina sends us an interesting circular describing a remedy which he recently found on sale at a village store. The "Hayes Healing Honey Compound" is said to contain a number of valuable ingredients, including "Wild Bee Honey." The circular states as follows regarding this honey:

"The honey made by the wild bee is very dark in color and is gathered from wild flowers, while the domestic or home bee gets its honey from garden flowers. Physicians have discovered that the wild bee honey can be eaten by a diabetic patient when ordinary domestic honey or sweets must be avoided."

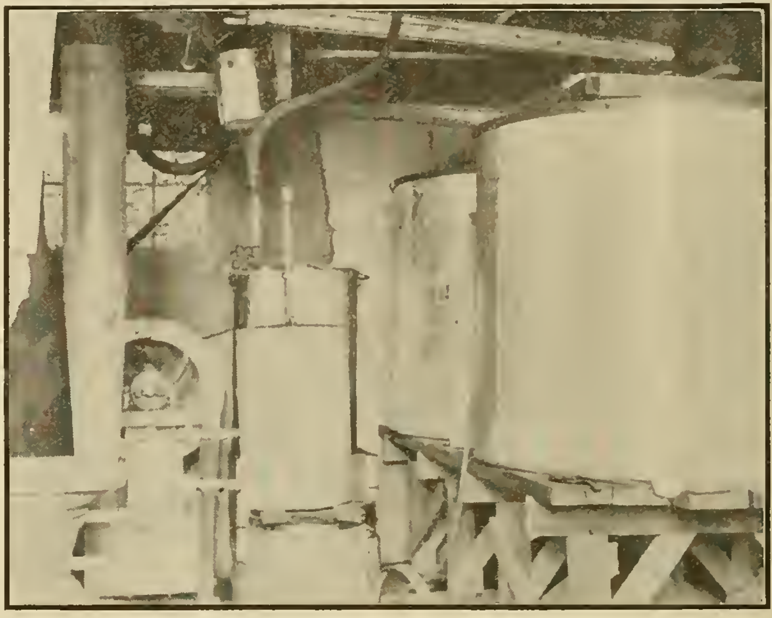
Although we have heard many ridiculous statements regarding bees and honey, this is certainly a new one.

# PRODUCTION OF EXTRACTED HONEY

## An Account of the Methods and Equipment for Extracted Honey Production in Use by Some Well-Known Colorado Beekeepers

By Frank C. Pellett.

IN our November number, comb-honey production under Colorado conditions was discussed somewhat at length. Not all Colorado beekeepers produce comb honey, however. There are several men engaged in the production of extracted honey on a large scale. Considering the fact that the markets have favored the production of extracted honey for the past few years, one wonders why more of the big beekeepers are not engaged in producing extracted rather than comb honey. Colorado beekeepers have developed the first selling organization for handling honey which earned large success. This is perhaps due to the fact that there are a larger proportion of the beekeepers of that State engaged on an extensive scale than is the case elsewhere and that most of their product is sold in distant markets. Such conditions discourage individual marketing. The honey sent out by the association is uniformly graded and bears a good reputation in the eastern markets.


Settling tanks in basement of Sutton's honey house.

In visiting eastern markets the writer has occasionally heard of a shipment of comb honey from some point in Colorado which has granulated in the combs. Granulated comb honey is a difficult product to move, and for a time it was a mystery why the comb honey from some localities should granulate so very quickly. In many places in that State the gum-plant or rosin-weed (**Grindelia squarrosa**), is common. The honey from this plant granulates very quickly, sometimes even before it is removed from the hive. There are few reports of much surplus from this plant, but it is usually mixed with honey from other sources. Where a little gum-weed or rosin-weed honey is mixed with the crop from alfalfa the whole is likely to candy in the comb before it reaches the consumer. The honey from gum-weed is yellow and of inferior quality. At the Association grading stations its presence is likely to be discovered, but small shipments from isolated locations occasionally reach the market. If the writer were in a gum-weed location he would certainly produce extracted honey rather than be subject to the annoyance of constantly watching to avoid the spoiling of the grade of a nice crop of comb honey through the mixture of a little nectar from this plant.

One prominent comb-honey producer spent considerable time and money in making over comb-honey equipment for the production of extracted honey last year. After producing one crop he is now spending time and money to fix it up for comb honey again this season. Some men who are experts in the production of comb honey can never be quite content with anything else. On the other hand, men who are eminently successful in producing a fine article of extracted honey are not interested in honey in sections.

Sutton's honey house and sign.

### Up-to-Date Equipment

At Loveland and Fort Collins are several beekeepers with the latest equipment for extracted honey production on a large scale. At Loveland I called on J. C. Aikin, brother of the late R. C. Aikin, who was a well known contributor to the bee magazines of the past. M. Aikin and his son who had recently returned from the army, very kindly took me in their car and we drove out to see the beekeepers near by. After a short visit with Homer Lovesee, a former Iowa man who has about 100 colonies in town, we went to see K. E. Sutton, who has several hundred colonies in outyards around Loveland. We found Sutton and his crew hard at work extracting which gave us an opportunity to study his equipment in operations.

His honey house is 16x32 and has the word "Honey" painted across the front for the full length. This can be seen from the main road for a distance of about a mile. A sign board has been erected at one end to make room for the word "Eat", so that it now reads "Eat Honey", as will be seen by the accompanying picture.

The building is provided with a

basement under the full structure. The engine for furnishing the power, stove for heating capping melter and furnishing heat, and storage tanks are all in the basement. On the upper floor there is a small storage room heated by steam pipes from the same stove that heats the capping melter. The extracting combs are stored in this room as they are brought from the apiaries. The heat prevents granulation of the honey before extracting and at the same time keeps the combs sufficiently warm to insure that the honey will run readily when the combs are placed in the extractor. Near the door to this store room is the capping melter and near this the extractor. The arrangement is designed to save every possible step of the operator when extracting. The capping melter is Mr. Sutton's own design and unlike those on the market. It is made with a double bottom with the space between filled with water. The ends are closed and it has a pipe drain. A steam pipe from a laundry stove in the basement furnishes the necessary heat, while the exhaust pipe runs through the warming room. Over the capping melter is a comb rack for holding the combs as they are uncapped. Under this rack is a sloping tin to carry off the honey that drips from the combs and at the same time to protect the combs from becoming too warm from heat rising from the melter.

The honey runs directly from the extractor to tanks in basement without handling. There are 200 gallon storage tanks, from which the honey is drawn into 60 pound cans. From the extractor it passes through a coarse screen and then through a cheese-cloth strainer which is suspended above the tanks and which affords a large surface for straining. The second picture shows the tanks and the pipes that run from the stove to capping melter and warming room above.

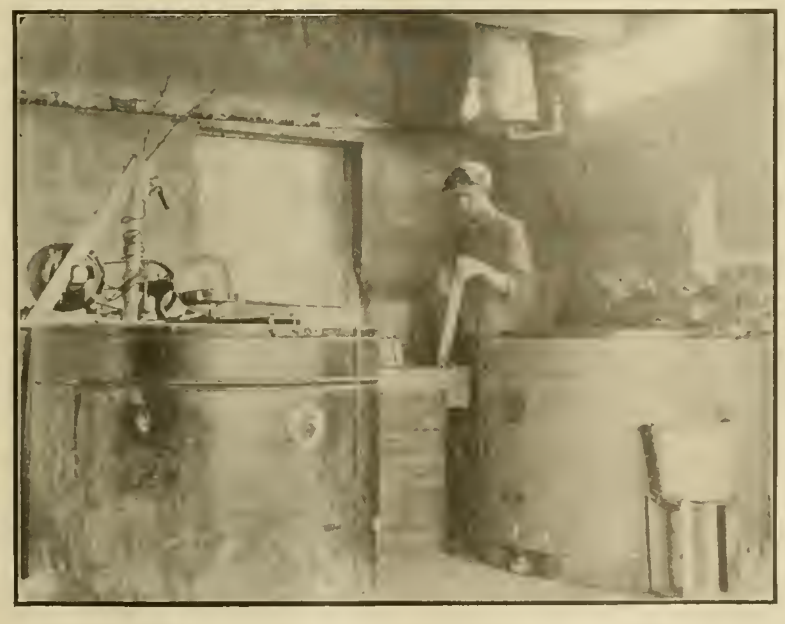
Lyons' honey house at Ft. Collins.

Now that labor is getting scarce and high it is important that the beekeeper who builds an extracting house plan it so as to eliminate all the labor possible. The mere arrangement whereby the honey runs directly from the extractor into the tanks, thereby saving the labor of drawing it from the extractor in buckets makes a big saving in handling a large crop. If the building is so arranged that one operation follows another from one side of the room to the other without unnecessary steps, it is possible for a man to handle a great many more combs in a day than where no attention is given to arrangement.

At Ft. Collins, A. A. Lyons has probably the largest extracting and storage house for extracted honey in the State. The building is about 50x56 ft. in size, is made of concrete and fireproof throughout. The rooms are separated from each other by fireproof walls. It is built in a hillside with entrance to upper floor on one side and to the lower floor on the other. At one side of the house there is a platform for unloading extracting supers directly through a door into a warming room. This room is long and narrow with a small track on which runs a truck for carrying supers to the extracting room through a door at the opposite end. The heating room holds from 250 to 300 full depth extracting supers. In fine weather he can thus take off enough honey ahead of the extractor to keep the force busy should there be a rainy day. In the extracting room there are two 8-frame power extractors driven by electric motors. These are shown in the picture. Next to the extracting room is a large room for storing empty combs. This room opens again on the platform, where the truck loads and unloads. The capacity of the plant is 100 to 150 cans a day with two men and a boy to operate.

In the basement is one large honey tank and two smaller ones for storage. The combined capacity is six thousand pounds. The honey is drawn into cans as fast as it settles. An alarm indicates when a can is filled and ready to be sealed.

Under one roof there is ample room for every operation, with storage facilities for extracting supers of filled combs, empty combs and cans of honey ready for market. There is a wax room 16x24, with a steam boiler for heating the building and for extracting the wax from old combs. At the back is a garage for the Dodge truck, a light truck and the family pleasure car.



Interior of Lyons' honey house at Ft. Collins, showing two large power extractors operated by electric motors.

## Honeydew

By Alex. D. MacGillivray

(Continued from March)

Boussingault believed that the production of honeydew was a disease of the plant. He extracted, according to Buckton, 26.7 grammes of sugar, cane sugar, inverted sugar and dextrine from one square meter of the diseased leaves of a lime tree; while the same amount of leaves from an unaffected tree, that is one not bearing insects producing honeydew, growing not far away, gave only 4.4 grammes. This would seem to show that the honeydew must be much richer in sugar than the sap extracted from the leaves. To secure such an increase in sugar, it would seem as if the sap of the plant must undergo elaboration within the body of the insect, and the globular enlargement of the rectum is where this probably takes place. Boussingault, who has analyzed the honeydew with a polarizer, gives the following result for samples examined in July and August:

| | July | August |
|---|---|---|
| Cane Sugar | 48.86 | 55.44 |
| Inverted sugar | 28.59 | 24.75 |
| Dextrine | 22.55 | 19.81 |
| | 100.00 | 100.00 |

When the sugar content of honeydew is taken into account, it is not strange that ants, wasps, butterflies, moths and bees of many kinds, including the honeybees, should seek it for food. The western Indians were also aware of the sweetening properties of this substance, since they collected the leaves that were thickly coated with honeydew, washed them off in water, and boiled down the water, producing a crude brownish sugar resembling an inferior grade of maple sugar.

The honeydew is evidently accumulated in the globular portion of the rectum in most species and extruded as a minute bubble. There is considerable variation in the impetus that leads to the freeing of the bubble. It is likely that in many species it is simply the pressure of the excretion upon the walls of the rectum, but in others the insect may be led to give up its excretion by the stroking of its abdomen. This is particularly true of the plant lice and certain scale insects. These insects are generally attended by ants, which gently stroke the back of the plant louse with their antennae, and are rewarded with a small drop of honeydew. This may be repeated, and the plant louse may give up more than one drop, but as a rule, the ant, after receiving one drop, passes to another individual and repeats the stroking of the back. Time must elapse, in the case of most individuals, before a second drop can be discharged. In some plant lice that do not produce much honeydew the anus is surrounded by long hairs for holding the drop of honeydew after it is extracted, and so it will not be lost.

Practically all flowering plants are infested by honeydew-producing insects. The great majority of these are different species of plant lice. Most of the species live upon the exposed surfaces of the plant, others live upon the roots, and still others produce galls upon the leaves or buds in which they live. The root inhabiting and the gall inhabiting species produce only a negligible amount of honeydew, while those species that live exposed on the leaves, usually on the under surface, where the outer covering of the leaves is more delicate, produce great quantities. The plant lice are fixed in position and those that live upon the leaves, because of their sedentary and gregarious habits, are exposed to the attacks of many enemies. It is a well-known fact that certain species of ants protect the plant lice and they are often figuratively described as their cows. The ants drive away enemies, build sheds over them, and may carry the plant lice into their nests upon the approach of winter and return them to the plant again in the spring. The plant lice, in return for this protection and care, excrete at the bidding of the ant considerable quantities of honeydew. It is an interesting fact that those species that live exposed and need the most protection should produce the greatest quantity of honeydew. There is, as Wheeler states, a symbiotic (living together.—Editor) condition existing between the two kinds of insects, while one kind is not wholly, it is in great part, dependent upon the other, and it is not unlikely the development of the honeydew-producing ability of the exposed species has been increased from the protection received from the ants.

When the insects are not attended by ants, the drop of honeydew instead of being gently extruded so that it can be seized by the ant, is extruded with a jerk, so as to throw it some distance beyond the body. The drop is carried into the air and alights upon the upper surface of a leaf below or upon the ground. If the colony of insects is large and the amount of honeydew produced is considerable, so that there is much more than the attending ants can use, the upper surfaces of the leaves become spotted, or more frequently covered, with the honeydew that is thrown into the air. The surfaces of the leaves have a glossy appearance, as if they had been varnished. When the production of honeydew is of considerable volume, it may drip from the tips of the leaves, and to one standing under the tree give the effect of a shower of rain. The raining of honeydew from trees has been reported so many times by different observers that it cannot be considered an unusual phenomenon. It is at such times that honeybees collect honeydew in enormous quantities, producing honey of an inferior quality.

When one considers the raining of honeydew and its production in mass, one is immediately led to the conclusion that each plant louse must produce a large volume of honeydew. Busgen, who has studied this matter exhaustively, showed, however, that a single plant louse on maple produced only forty-eight drops in twenty-four hours, a single plant louse on linden nineteen drops, one on a different kind of maple nine drops, and one on rose only six drops. Since Busgen made numerous counts of the number of drops produced, there is no question that the amount produced by each individual insect is very small.

In order to appreciate how such a volume of honeydew can be produced as has been described, the number of individuals engaged in its production must be realized. The insects that produce honeydew are of such size that several hundred might be colonized on the under side of a single maple leaf. Fifty ordinary sized plant lice would not fill a teaspoon of average size. The often-quoted statement of Huxley is that the produce of a single plant louse in the course of ten generations, supposing all individuals to survive, would weigh more than five hundred million of stout men, that is, they would weigh more than the entire population of China. Such an idea seems preposterous. But Buckton, a prominent English student of plant lice, offers the following calculation. For the sake of simplicity the calculation assumes that each plant louse lives twenty days and that at the end of this time each plant louse shall have produced twenty young. It should not be forgotten that many individuals may live more than twenty days and produce more than twenty young and that each begins to produce young at the age of five days. Then, at the end of twenty days, there would be produced twenty individuals; at the end of forty days, 400 individuals; at the end of 100 days 3,200,000 individuals; at the end or 200 days, 10,240,000.000.000 individuals, and at the end of 300 days, 32,768,000,000,000,000,000 individuals. If it is assumed that 1,000 plant lice weigh one grain, and a stout man weighs 2,000,000 grains, then the weight of a single man would be equal to that of 2,000,000,000 plant lice, and the weight of the descendants of the single plant louse at the end of 300 days would equal the weight of 16,284,000,000 men, or several times the weight of the entire population of China. If you will examine the buds of an apple tree during the winter season, you will find around each terminal bud from one to six or more minute black globular objects. Each of these is the egg of an aphid. If you were to count the number of terminal buds on a full grown apple tree and then estimate the number of plant louse eggs borne by the tree, you will have some idea of the possible number of plant louse inhabitants of this tree next spring. Then just imagine that each of these eggs should produce a stem mother each with a number of descendants such as calculated by Buckton, and I can assure you that this calculation is much below rather than above the actual number. I think you will agree with me that there would be no room in this world except for plant lice, and even if each individual was producing only ten drops of honeydew in each twenty-four hours, not only the other inhabitants, but the plant lice themselves would be drowned in the volume of honeydew produced. This calculation is given in order to make the reader appreciate the enormous number of individuals that may be produced. It is not known how many of the individuals of each generation will survive, but there is a vast army of predacious and parasitic insects who make it their main duty to destroy and hold in check the overdevelopment of plant lice. Suppose only one per cent of this innumerable host survived and produced honeydew, is it strange, when the number of survivors is slightly increased, either through favorable conditions for the development of their enemies or favorable weather conditions for the production of plant lice, that it should not be an unusual occurrence to have trees actually raining honeydew?

## Obituary—Dr. G- Bohrer

It is worth while for a bee magazine to make mention of such a man as was Dr. Godfrey Bohrer, of Chase, Kansas, the last of the members present at the first convention of United States Beekeepers, at Indianapolis, December 21, 1870, almost 50 years ago.

Dr. Bohrer was born in Ohio, lived in Indiana a number of years, and finally went to Kansas, where he served twice as a member of the Legislature. He began beekeeping at the age of 30. He served as a surgeon in the Northern Army during the Civil War. This was the cause of a very interesting incident, in 1906, at the meeting of the National Beekeepers' Association, at San Antonio, Texas. The writer was presiding. During one of the meetings a lady beekeeper, of the vicinity, brought to the president's desk a magnificent bouquet from her garden (it was November 8). This bouquet we decided to offer to the oldest member of the National present. Dr. Bohrer was not the oldest beekeeper there, but he was the oldest member of the National. This elicited from him, as he arose to thank the lady, a touching impromptu address, in which he recalled the Civil War, the harsh feelings that existed at that time between North and South, and contrasted it with the present brotherly feeling of Union under the Stars and Stripes. The speech, full of feeling, brought tears to the eyes of several old Confederates present.

Dr. Bohrer was a subscriber of the American Bee Journal for 54 years, one of the pioneers of Kansas beekeeping and for many years president of the Kansas State Association.

Dr. Bohrer and our own Dr. Miller, who is nearly two years his senior, often had a tilt about comb honey, at conventions. Dr. Miller has always been known as a leader in the production of comb honey. Dr. Bohrer could not tolerate the consumption of comb honey, holding that the comb was indigestible and unfit for human food, while Dr. Miller held that since the broken comb particles could not be assimilated by the stomach, it acted upon the bowels in exactly the same way as the bran in Graham bread, and was conducive to health. We believe the great majority are inclined to this view.

Dr. Bohrer, with the boquet presented at San Antonio.

Dr. Bohrer was 87 years old. He leaves a widow, 4 years older than himself, 5 children, 8 grandchildren and 11 great grandchildren. In his death we lose a long-tried friend.

C. P. D.

### Dr. Miller Improving

I'm not gaining as I expected. I expected to gain rapidly, and it's slowly. Still I am gaining, and that's much. Although lying down is still my favorite gait, I spend half an hour outdoors each day, even if it be down near zero.

C. C. M.

## Large Producers Vs. Large Hives

By Porter C. Ward

I HAVE read and reread with much interest the article by E. F. Atwater, "Small vs. Large Hives," in the January Journal. It seems to me that he approves of the very thing he is talking against. Mr. Atwater says:

"The writer had hoped for much from the large, single-story broodnests, but when men like J. L. Byer and F. Greiner state that they get identical, or nearly identical results in honey from other hives, a change may be inadvisable."

I do not know just where he is quoting from, but in September, 1917, Gleanings, page 676, Mr. Byer writes practically the same thing, only Mr. Atwater does not quote it all. He, Mr. Byers, says that while there is practically no difference in the yield of honey, yet there is quite a difference in the management.

Allow me to quote from Mr. Byers' statement:

"The hive which I use extensively, more than any other, is the ten-frame size commonly called the Jumbo. The management is much the same as outlined for the very large hives, and with pure Italian bees we have little trouble with swarming in most seasons.

"Answering the question, then, as to what hive I would use if starting all over, I can say that my preference is for the ten or twelve-frame, Jumbo size. If forced to use the Langstroth frame, then I suppose I would choose the eight-frame in preference to the ten-frame Langstroth, as the latter is not big enough, or too big, to suit me in running outapiaries."

The big hives, and many of his hives are much larger than the Dadant, require very little or no attention and swarm very little, or not at all, winter well and generally require no fall feeding; and if any is to be had at all, these rousing colonies will surely get the surplus. It is clear that Mr. Byer prefers the big hives, and Mr. Atwater's statement is misleading, since all that I have ever seen from Mr. Byer is for the big hives, even to 1½-inch spacing.

Allensville, Ky.

## The Sugar Shortage Abroad

By C. W. Aeppler

THE sugar shortage, which seems to have gripped the whole world, is given considerable attention in two European bee journals just come to hand.

Of all European countries, Austria seems to have suffered most. The "Bienen-Vater" gives over about half of its December issue to the discussion of the sugar shortage. Last May a request was made that all beekeepers report the number of colonies that they had lost through starvation during the winter of 1918-19. According to detailed figures submitted, it can be summarized that beekeepers who are members of the Austrian Beekeepers' Association or its affiliated associations lost 30.8 per cent of their bees, and beekeepers who were non-members lost 38.3 per cent, or approximately 35 per cent of the bees of German-Austria were lost through starvation. In actual figures this means about 135,300 colonies, or more colonies of bees than in the entire State of Wisconsin, and almost the combined numbers of Wisconsin and Minnesota. (Based on 1910 census).

It seems as though the beekeepers of Austria were required to deliver to the government all possible honey during the war. Economic conditions being very bad in the fall of 1913 made the delivery of sugar for bee-feeding purposes extremely difficult, hence the heavy losses.

However, conditions were much better in the fall of 1919. A very poor honey crop is reported for 1919, but the beekeepers had the organization to obtain sugar to feed their bees. The organization! Ah, in which we American beekeepers are such failures.

From the Swiss Bee Journal for December, 1919, the following verbatim translation is taken:

"At present there is a sugar shortage through the entire world. Even America, the richest of all lands in money and commodities, is no exception. The non-existence of a timely organization to secure and distribute sugar for bee-feeding purposes, makes the calamity all the greater.

"If a country with such a large sugar production and such extensive shipping facilities is suffering under a world sugar shortage, how much worse off must our poor, isolated, sugar-poor Switzerland be. If the beekeepers of Switzerland are any better off than our American colleagues we must thank our organization and our timely care. Furthermore, we have already made arrangements with the authorities for the delivery of sugar, where needed, for spring feeding. In view of the fact that a good honey crop was secured, a much larger sugar appropriation has been promised. Of course, sugar prices will advance. Since November 1, the price of industrial sugar in carload lots has increased from 150 Fr. per 100 Kg. to 200 Fr."

These figures, in our money, would read an increase from 15.6c per pound to 19.5c per pound. It might be worthy of note that Swiss beekeepers are buying sugar at present for about the same price that we are, and the hard thing to comprehend is—why? No sugar is produced. The question still remains unanswered: Why are we paying such exhorbitant prices in the United States at the present time? It would be interesting to know just how many millionaires have been created from the sale of high-priced sugar.

Wisconsin.

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## Bee Pasturage

By J. H. Paarmann

HAVING recently entered into partnership with a number of colonies of bees, they have appointed me assistant manager of their supply department. In this capacity I am making an inventory of their available sources of raw materials in and about the city of Davenport, Iowa, as well as a report upon the time of year when supplies may be withdrawn from the storehouses. I accordingly kept daily watch of our flowers, wrote down the names and took a photograph of all that were patronized by bees, marked (*) those that seemed to yield mainly pollen, and (†) such as were visited by very many bees. This list shows only the more common plants of which I kept records during the 1919 season. Some common pollen plants, as corn and ragweed, and such honey plants as horsemint, should, of course, be included in a complete list, and such plants as pear and apple should receive more emphasis, but I am telling only what I found in repeated observations during this one season. Other seasons would give other results. Some days, I'll admit, the observer was doing useful work in the beeyard when he ought to have been watching the flowers.

Blossoms of Culver's Root, *Veronica virginica.*

To help identify unfamiliar plants, their Latin names are added, as in Gray's New Manual, 7th edition. Only such illustrations are used that have not previously appeared in the Journal.

The blooming periods, as given, refer principally to the level land beyond the bluffs. Down in the valley and on south slopes, plants bloom a week earlier and on north slopes a week later than here shown.

I. Last week in March until middle April (dandelion until middle May and again in late fall; ash trees until middle May).

**Acer saccharinum,** *soft maple.
**Ulmus americana,** *American elm.
**Salix sp.,** *†pussy willow.
**Taraxacum officinale,** †dandelion.
**Populus deltoides,** *cottonwood.
**Acer negundo,** *box elder.
**Fraxinus spp.,** *ash, various species.
*Tulip.

II. Last half of April (plum begins earlier; apple and pear bloom until middle of May).

Sheepberry, *Viburnum Lentago.*

Plum, cultivated.
Cherry, cultivated.
†Gooseberry, cultivated.
Crab, cultivated.
Apple and pear, cultivated.
**Betula nigra,** river birch.

III. First half of May (barberry blooms a week longer).

**Malus ioensis,** †western crab apple.
**Cratægus mollis,** †Hawthorn.
**Berberis Thunbergii,** †Japanese barberry.

IV. Last half of May and early June (white clover until August 1; roses until July 1).

**Lonicera tatarica,** †tartarian honeysuckle.
**Lonicera hispida,** †honeysuckle.
**Lonicera Morrowi,** †Morrow's honeysuckle.
**Quercus spp.,** *Oaks, various species.
†Flowering crab, cultivated.
**Acer negundo,** box elder (honeydew on leaves).
**Aesculus hippocastanum,** horse chestnut.
**Prunus serotina,** wild black cherry.
**Spiraea Van Houttei,** "Bridal wreath."
**Weigelia rosea,** weigela.
**Trifolium repens,** †white clover.
**Melilotus officinalis,** yellow sweet clover.
**Hicoria spp.,** *hickory, various species.
**Rosa spp.,** *roses.
**Viburnum lentago,** †sheepberry.
**Viburnum prunifolium,** †black haw.
**Aquilegia canadensis,** wild columbine.
**Robinia pseudacacia,** †black locust.
**Deutzia Lemoinei,** †Lemoine's Deutzia.

V. First half of June (red raspberry begins a week later than black raspberry; alsike blooms until late July).

†Black raspberry, cultivated.
**Philadelphus coronarius,** †mock orange.
Red raspberry, cultivated.

Blossoms of ninebark, *Physocarpus opulifolius.*

**Physocarpus opulifolius,** ninebark.

**Liriodendron tulipifera,** †tulip tree.

**Trifolium hybridum,** alsike clover.

VI. Last half of June and early July (white sweet clover until middle of September).

**Melilotus alba,** †white sweet clover.

**Ligustrum Regelianum,** †Regel's privet.

**Leonurus Cardiaca,** †motherwort.

**Tilia americana,** †American linden.

**Rhus glabra,** sumac.

**Sambucus canadensis,** elder.

†Onion, cultivated.

VII. July (milkweeds, muskmelon and matrimony vine bloom well into September).

Muskmelon.

**Elæagnus sp.,** Russian olive.

**Asclepias spp.,** milkweed, various species.

**Cephalanthus occidentalis,** †buttonbush.

**Veronica virginica,** Culver's root.

**Psedera quinquefolia,** Virginia creeper.

**Monarda fistulosa,** wild bergamot.

**Spiræa salicifolia,** meadowsweet.

**Lycium vulgare,** †matrimony vine.

VIII. August and early September.

**Gaura biennis,** biennial gaura.

**Nepeta cataria,** catnip.

**Verbena spp.,** vervain, various species.

**Cassia chamæcrista,** partridge pea.

**Echinocystis lobata,** wild balsam apple.

**Carduus discolor (?),** field thistle.

**Polygonum spp.,** †smartweed.

IX. September (first seven begin in late August; last five bloom until frost).

**Helianthus spp.,** sunflower (wild).

**Solidago spp.,** goldenrod, various species.

**Eupatorium serotinum,** late-flowering thoroughwort.

**Eupatorium ageratoides,** white snakeroot.

**Veronica fasciculata,** ironweed.

**Sicyos angulata,** one-seeded bur cucumber.

**Bidens frondosa,** bootjack.

**Helenium autumnale,** sneezeweed.

**Aster ericoides,** frostweed aster.

**Aster novæ-angliæ,** New England aster.

**Aster spp.,** other species of aster.

Iowa.

## Which Queen Cells Are Destroyed?

I WONDER if Dr. Miller and I are not at cross purposes, or at least if we are not overlooking something. Since reading his comments on the subject it occurred to me that it makes a big difference **where** the cells are located in the hive. A colony of bees is far from always being a unit.

It takes a very little change in the arrangement of their internal affairs to cause many sundry and unusual reactions. Here is an example:

Some years ago I put a very old, rubbery and mouldy comb in the middle of a strong colony containing a choice imported Cyprian queen. Some weeks later in looking over that colony I was much disturbed to find a nice young queen at work. A little further inspection showed the old comb about as it was when put in. The next comb beyond it showed laying workers busy, cells with many eggs, some capped drones in worker cells. A few combs farther on had the old queen doing as fine work as ever. The hive held fourteen Langstroth frames.

Now, would not that have been a fine colony for a novice to have tried to requeen? The young queen was used to start a new colony and the old queen did good work for the rest of the season. That old comb simply divided the colony so far as the reaction of the bees was concerned. There was no supersedure impulse involved.

When I return combs to the hive I put them in the same place they were taken from. The ripe cells normally are near the middle of the hive, while the newer ones are usually on the outer combs, those at least a little removed from the comb with the ripe cell. That may explain the difference in the results as observed by the doctor and by me.

ARTHUR C. MILLER.

Yes, under such conditions I should expect bees to break rules.

C. C. MILLER.

# BEEKEEPERS BY THE WAY

### Uncle Sam's Beeman

It is not easy to write anything new about Doctor Phillips, of the U. S. Department of Agriculture. He has been too long before the public as Government Apiculturist, has been everywhere and all the beekeepers know him already.

It is a man's size job to represent an industry of the importance of beekeeping in the Department. All the problems and all the kicks of the whole country are likely to find their way to his desk. If anything is wrong it is up to Uncle Sam to be prepared to fix it immediately, or give definite instructions how it can be done. It keeps the Government men stepping lively to meet the demands of the public for information and for assistance.

The beekeepers of the country have been well served by Dr. Phillips and his staff. Much real progress has been made in the science of beekeeping since the work has been under his direction. The recent schools for commercial beekeepers conducted by department men have proved very popular and greatly stimulated the interest of beekeepers in localities where they have been held.

Phillips on a California bee range.

## Some Apiarian Recollections

By George W. York

POSSIBLY I may be forgiven by the reader if I am quite personal in these recollections. If so, I shall begin by saying that my first interest in beekeeping and beekeepers began when, during the winters of 1881 to 1884, I lived in the very pleasant home of Mr. Benjamin Harding, near Kent, Ohio, while teaching the winter country school in his district. He was a nephew of Mr. Thomas G. Newman, and had a few colonies of bees.

At that time Mr. Newman was editor of the American Bee Journal, in Chicago, and Mr. Harding once said to me that he thought I might possibly be useful in Mr. Newman's employ. Evidently he must have intimated as much to Mr. Newman, for, early in March, 1884, when he was visiting his aged sister, and also the Harding family in Kent, I was sent for, and had the pleasure of meeting Mr. Newman for the first time. It was then arranged that I should enter the employ of Thomas G. Newman & Son, in Chicago, Ill., at a salary of $50 per month. (The "Son" in the firm was Alfred H. Newman, whom many will remember).

I arrived in Chicago late Saturday night, March 29, and Mr. Newman met me at the Union railroad station, he being the only person in all Chicago that I had ever seen before. On Monday morning, March 31, I began my labors in the American Bee Journal office, which ended with May 1, 1912, or 28 years afterward.

The spring of 1892 I purchased the Journal from Mr. Newman and continued as its editor and publisher for 20 years, when I transferred it to Mr. C. P. Dadant, of Hamilton, Ill., who is still its popular editor.

I had not been long in the office of the American Bee Journal until I learned that Mr. Newman had made a trip to Europe (in 1879) in the interest of American beekeeping; that he had met many of the leading beekeepers across the Atlantic, and had visted several countries where beekeeping was beginning to be followed quite extensively. He brought back with him the photographs of many of the noted beekeepers whom he had met in England, France and Italy. He delighted to tell of his trip as the accredited representative of American beekeepers to the beekeepers of the old world. He was made an honorary member of many of the foreign beekeepers' societies, and doubtless helped greatly to establish friendly and helpful relations between the beekeepers of America and those of the foreign countries which he visited.

The first national convention of beekeepers that I attended was held in Indianapolis, Ind., in 1886. There I met W. Z. Hutchinson, who, a year or two later, started the "Beekeepers' Review," now called the "Domestic Beekeeper." I roomed with him at the hotel where the attending beekeepers stopped during the convention and he confided to me his plans for beginning the publication of the "Review." His enthusiasm was unbounded then, and evidently was never dampened.

Mr. Hutchinson was not only a thorough beekeeper, but was a delightful man to meet. He had many excellent qualities, and we became fast friends, which continued to the day of his death, in 1910, with the possible exception of the time, a few years after he began the "Review," when he and Prof. A. J. Cook advocated the production of "sugar-honey" by feeding the bees cane sugar during dry and honeyless seasons, which procedure I felt in duty bound to oppose very strongly through the columns of the American Bee Journal. While I afterward found that Mr. Hutchinson and Professor Cook were sincerely honest in their advocacy of the plan for unnatural comb-honey production, I still think they were wrong in regard to the matter. I believe the great majority of the beekeepers of that day agreed with the stand the American Bee Journal took, and Gleanings in Bee Culture cordially seconded my position.

I happened to come upon the apiarian scene when the bitter fight conducted by Mr. Newman through the American Bee Journal against Prof. H. W. Wiley's "scientific pleasantry" was at its height. "Scientific pleasantry" was what Professor Wiley, years afterward, termed his former statement, that the comb of comb honey was first made by machinery out of paraffine, then filled with glucose, and then sealed over with a hot iron, without the least intervention of the bees—or some such unfortunate utterance, which would suggest "manufactured comb honey by machinery." Of course, coming from such a noted scientist and chemist as was Dr. Wiley at that time, gave it wide publicity, to the great damage of comb honey, which never has been, and never will be manufactured except by the bees themselves.

In those early days it was surprising how many different forms of the "Wiley Lie," as Mr. Newman called it, appeared from various authors, and in many newspapers. It kept Mr. Newman as busy as a bee at a Sunday school picnic to run them down, and the vials of verbal wrath that he poured out upon the mistaken imitators of Wiley would have filled a fair-sized encyclopedia. But I am glad to relate that Professor Wiley, in later years, tried to atone for his unfortunate utterance by doing all he could to stop the prevalent practice of adulterating foods of all kinds, so that today there is scarcely any adulterated foods upon the market, and certainly no adulterated honey. Comb honey has always been genuine, so there was no need to defend it except from ignorant or mischievous attacks.

I might say here that at the World's Fair convention of the National Beekeepers' Association, in 1895, in Chicago, Mr. Newman and Professor Wiley met for the first time; and as they were introduced and shook hands, it was a very tense moment, and a generous outbreak of hand-clapping approved what proved to be the "burying of the hatchet" after a long and bitter war of words, especially on the part of Mr. Newman.

I recall the great hullaballoo a few would-be apiarian inventors made over their "reversible brood-frames," perhaps James Heddon, of Michigan, being the chief, some 30 years ago. Wonderful claims were made for such frames, and also for reversible hives; but like many other fads, they have almost been forgotten.

Almost immediately after coming into the editorship of the American Bee Journal, I visited Dr. C. C. Miller and family in their quiet, restful home in Marengo, Ill., about 65 miles northwest of Chicago. I think it was in 1892. At that time Dr. Miller was running a home bee-yard and two or three out-yards, all for comb honey. I had met him before that, in Chicago, but I wanted to see him in his home and bee-yard, and also meet his good wife and her sister, Miss Emma Wilson, who for so many years has been Dr. Miller's splendid assistant in all of his bee work. I had a most delightful time, and then began some of the most intimate and valued friendships of all my life, which have continued unto the present day.

From the very time I became editor of the American Bee Journal I looked forward with eager interest to the time when I should have the opportunity of meeting by competitor in the editorial field—Mr. Ernest R. Root—now for some 40 years editor of Gleanings in Bee Culture. It finally came at the annual meeting of the National Beekeepers' Association on the World's Fair grounds in Chicago, the fall of 1893, in the Louisiana Hotel.

I wondered just how I would like Mr. Root; how he would impress me, etc. I am free to say that I was delighted with him, and have been so ever since. There has never been a single break, or even a crack, in our long years of friendship, so far as I know; but I think the credit for its uniformity and continuance is due to Mr. Root. He has always met me more than half way.

It seems that for many years preceding the year 1890 there did not exist the best of feeling among the editors of the bee papers, and also among a number of the leading beekeepers. It became tiresome, and must have been almost annoying to some of the peaceable readers. But the times were changing. We young editors seemed to have a different view of some things. We could forget the things that were behind, and cared more for the future. And for all the 20 years following 1892 we tried to keep out of our columns anything that looked like fussing, although, of course, there were occasional times when it seemed necessary to speak plainly. But on the whole, I believe that as beekeepers became better acquainted with each other, through conventions and otherwise, there was less of the old-time bickerings and strife.

Washington.

## Retailing Honey

By W. S. Pangburn.

ON page 23 of the American Bee Journal for January, C. C. Baker seems to be out of patience with the journals for giving so much encouragement to beekeepers to cultivate their home market, and seems to be pleased that the editors criticise some of the ways of the retail producers.

We have carefully read both articles, and we heartily agree with all the editors said on the subject on page 301, September number.

We cannot, however, agree with Mr. Baker's ideas of what should take place in the handling of our product, and we believe there are many beekeepers who would not agree with him.

Just what would happen if the "big jobbers" were given full swing in the handling of our honey "exclusively," would be an easy guess.

All we have to do is take a look at other lines that are in the grip of a comparatively few individuals.

Mr. Baker seems to think that, because a salesman is selling the products of these "big fellows," that they know all there is to be known about honey and the selling of it. On the contrary, very few of them know anything about honey, how it is produced, and make some big blunders in selling it.

The first requirement in a good salesman is a thorough knowledge of the line he is selling.

Simply because a salesman makes a sale is no sign that he is creating a demand for honey, and that he can go back and sell to the same customer again. If he cannot do this, something is wrong. Either his price was too high, he was not selling quality goods, or he used poor judgment in making his sales.

Whenever a salesman goes into a small town and unloads a lot of high-priced bottled goods onto a merchant who has to retail the goods at a price far above what the people will pay, he is neither "creating a demand" nor is he a good salesman.

I can cite three instances of this kind in my own territory. These merchants will buy no more of this kind of goods. They have not sold the honey, which shows there has been no "demand created," and it shows poor salesmanship, though being done by these "live salesmen." If the salesman had known his business, he never would have sold a lot of 6-ounce and 1-pound jars of extracted honey, and cartoned comb honey, in these small towns.

Sales like the above are a detriment to our business instead of a help, and never should have been made. We have learned that the small container, which necessarily comes high, has no place in the small towns except in a very limited way.

The bottler has a place in the ranks; we need him to get a lot of city trade the average beekeeper cannot reach. He is entitled to a reasonable profit and should be encouraged. We, retail producers, also have our place, and can reach another class of buyers that the bottler cannot.

Mr. Baker claims that "not one beekeeper in a thousand" is a salesman. I do not know just what Mr. Baker considers a salesman, but I do know that the beekeepers are selling their honey, and at good figures. We have had considerable correspondence with beekeepers in the past two or three years, in regard to buying honey, and in that time have only been able to get hold of 1,000 pounds at a price that we could pay and get out. Very few had anything to offer, as they were sold out. Talk with beekeepers at conventions, and short courses, or anywhere you chance to meet them, and how many of them are complaining because they cannot sell their honey? I have found none. If there is anyone better qualified to sell honey, tell how it is produced and answer the many questions asked about bees and honey, than the up-to-date beekeeper, who is it? It surely is not a man selling a pipeless furnace. I had a fellow of this kind who wanted to sell my honey along with the furnace this fall, and while he could talk furnace, and was a good salesman in his line, he knew nothing about honey, and I decided he had better stick to the furnace and let honey alone.

Mr. Baker points to the packers as being the solution of the farmer's troubles in the selling of his stock. This is not a farm paper, but I can say that there is not one farmer in a million that would not like to see this ring of 5 big packers broken up and put into competition with one another, if possible. If the exclusive buying of the farmers' product has been so satisfactory, why do the farmers feel this way? I have been a farmer for 30 years and know what the farmers think of this sort of thing.

Why did the California fruit growers organize? Simply because they were up against a similar proposition, only they could help themselves, and did. The same thing will happen if we allow our honey to be handled "exclusively" by the big fellows, as Mr. Baker suggests.

"Why should we worry about what the jobber makes on our honey?

Just this much. Whenever the jobber gets an extortionate profit on honey, and has the sale of it exclusively, he is curtailing the demand, and people will stop buying honey; defeating the very object that all beedom is working for. There are some good men in the honey business who do not produce a pound of honey, and we need them, but if the business was to be turned over to a few big fellows, it would soon be overrun with parasites, and they, like "cooties," make life miserable, and multiply fast.

We believe in the doctrine of the bee magazines, to cultivate our home markets as much as possible. Every beekeeper should further the sales of honey in his own territory. We are on the ground, know the situation, and what the market requires, better than any organization. We each have our place in this selling and advertising proposition, and should not think for one minute of turning the selling of our product over to someone else "exclusively." If the beekeepers in general ever consider a thing of this kind, let us make it cooperative, and "keep it in the family." There is a possibility that this may come in time, but as yet it is not looming in the distance.

Center Junction, Iowa.

## A Strainer That Doesn't Clog

The following plan will make it possible to strain honey thoroughly as fast as extracted. The idea is really A. G. Kursten's, as he and I have exchanged work for years:

With three platforms of different elevations, the honey need not be handled, but is drawn from the extractor into the settling tank and from the tank into the containers. The top of the honey tank should be about six inches below the bottom of the extractor. An insect-tight tube should extend from the extractor outlet for a foot over the edge of the tank. With a yard and a half of muslin, make a long bag which will rest lightly on the bottom of the tank and close the top tightly about the tube. Tie a canvas cover over the top of the tank to keep out dust and dirt. The strainer cloth must not be a stingy affair, but a big, generous bag as large as a two-bushel grain sack. The honey strains through the muslin sidewise, while foreign matter floats on top. With this kind of strainer one can work from morning till night without clogging the strainer, and can draw off honey at any time. WALTER REPPERT.

Iowa.

## More Wire Kinks

In the December issue of the American Bee Journal the article by F. B. Richardson interested me much and I thought it was just what I had been looking for. I never could keep the wires strung tight. They would be tight on completing the wiring of a frame, but in a short time they would be loose. So Richardson's nail hook method appealed to me. I at once tried to put it in practice, but either I did not go at it right or my fingers were too clumsy to accomplish what was intended. I could pull the wire tight all right, but could not fasten it and keep it tight.

While puzzling over it I lit on this way: Fasten the wire around the head of one of those fine nails used in nailing frames, drive the nail through the end bar so it is about half way through, and clinch on the outside. The nail to be driven from the inside. Fasten the other end of wire to another nail, first having determined the proper length, and drive it through the end bar as before, but on the opposite end of the frame, or far enough to tighten the wire until it sings; then clinch the nail.

The wires can be strung as tightly as you desire and will stay tight.

It can be done as quickly as bending the nails into hooks, and it gives better results, in my hands at least.

DR. J. E. AIGLEY.

Illinois.

## The (Poor) Middleman

By Fred Huchting

IN the January issue of the Journal, under the topic of "Marketing," C. C. Baker tried to give beekeepers an idea that they would get a better price for their honey if they sold it direct to the packers, which I am absolutely opposed to for the following reasons. First, if the people would buy their honey direct from the producer they would eliminate the middleman, who must charge the people for his labor, advertising and profit, the latter usually in excess. If the middleman is eliminated the beekeeper can get a better price for his honey, save his customer from 20 to 30 per cent and sell more honey, because his customer will willingly buy more when he is not charged an enormous price for it. Mr. Baker indirectly states, "Let the middlemen get theirs." The Government is advising the people to buy direct from the producer and thereby beat old "H. C. L.," and any beekeeper with a little common sense knows that is good advice. Mr. Baker also states that the beekeepers should send their customers to the local grocer; but why not have the beekeeper split the grocer's would-be profit with his customer? Second, the packers would put the beekeepers in a fine position if they could control the honey market. They would control it in the same manner as they are controlling other markets today. They would give us their price for our honey and we would have to accept it. Mr. Baker asks, "How much did the farmer get for his pork before the packer took hold of it?" Well, Mr. Baker, is the farmer gaining anything when he sells his pork for 30 cents today when he got 10 cents for it before the packer took hold of it, and when the farmer wants to buy a harness today he must pay $60, when he could get one for $20 before the packers' time, or in other words, selling his stock at a 200 per cent profit and buying his supplies at an increase of 200 per cent.

Wisconsin.

## Imperfect Mating of Queens

By Prof. John Anderson

THE bee-mating experiments carried on on Duck Island by Mr. F. W. L. Sladen last July and recorded on page 424 of the December American Bee Journal, have recalled to my mind some observations made in Lewis in 1917. There I had an island all to myself, so far as bees were concerned, and I made a few experiments.

On July 5 a stock placed in isolation gave off a swarm which formed two clusters, thus suggesting the presence of at least two virgins. The two clusters were separately hived. A few days later a third swarm was observed and duly secured, so that there were four stocks, all with queens to mate. The only drones within reach were those flying from these four stocks, but it does not follow that all the available drones were half brothers of the virgin queens. A few unrelated drones might have joined the stock before it was placed in isolation. Even so, it is clear that the choice of the queens was very limited.

On July 23 eggs were found in two of the hives, and the queens in the other two had begun laying by August 3 and 9, respectively. On the last date it was noticed that one of the two earlier swarms had worker brood on 7 combs and no drone brood at all. Two of the other three newly-mated queens produced mainly drone brood (in worker cells), each having just a few scattered cells with worker brood. The last queen to lay was in the parent hive and produced mainly worker brood, with a very few drones (in worker cells).

It occurred to me that the microscope might assist in finding the cause of this abnormality in a young queen, so on July 9 I killed one of the two queens producing mainly drones, and examined the fluid of the spermatheca. To the naked eye it looked as clear as water, and my first thought was that I must have been mistaken in supposing I had seen any worker brood at all in the hive from which this queen had been taken. The microscope, however, revealed the presence of a very few sperm cells, these being very active and displaying movements which were all the more evident and vigorous because unimpeded by the usual congestion. It was perfectly evident that the preponderance of drone brood in the offspring of this queen was due to imperfection in the mating. For some reason or another she had received only a small quantity of sperm, and so was able to fertilize only an occasional egg.

It has been stated that a newly-mated queen sometimes begins by producing drone brood mainly or entirely, and becomes normal after a little practice. In such a case it is probable that it has taken the queen a little time to acquire control of the mechanism of fertilization. In order to give the second queen an opportunity to improve I let her remain in the hive for some time longer, but she continued to produce mainly drones. Some worker offspring of those abnormal queens had by this time emerged and seemed normal.

In the examination of this second queen, on September 17, I associated with myself Professor J. Arthur Thompson, of Aberdeen University in order that I might have independent testimony to this peculiarity in a queen. I burst the spermatheca of a normal queen under the cover-glass and directed the professor's attention to the issue of a "milky fluid" as described by Dzierzon, who could tell fertile from unfertile queens by the naked eye long before he called in Leuckart and Siebold with their microscopes. Later we made an examination with the microscope and saw a field filled with countless squirming threads, twisting, waving, heaving, like a field of corn in the wind.

When we repeated the performance with the abnormal queen Professor Thomson, observing the naked-eye appearance of the burst sac, remarked that it was "quite different." On looking through the microscope his report was, "They are here, and they are active, but they are very, very few."

Sladen, in Duck Island, Canada, and Anderson, in the Outer Hebrides, Scotland, have independently discovered that queens mated under circumstances in which their choice of a drone is very limited, are apt to become producers of inadvertent or accidental drones (drones developed in worker cells). We went a bit further on this side and found that those abnormal queens had secured an insufficient supply of sperm when mating, and we have now to consider whether there is any probable reason why the mating act should be thus

H. C. Cook's boiler for cleaning frames from diseased colonies. Closed for boiling.

incomplete. Mr. Sladen has suggested that the presence of handpicked drones not more than about two weeks old had something to do with his results. This is quite a probable explanation, but there may be others, and there is room for further observation and experiment.

What occurred to me in August, 1917, was that by greatly restricting the choice of the queen, and perhaps by compelling her to mate with a related drone, I had possibly reduced the vigor of the mating operation, so that the "ensemination" of the queen was very incomplete.

The fact that a virgin queen, when marking the position of her hive, finishes by ascending into the upper air in a great spiral, has given rise to the erroneous view that mating occurs at a great elevation, and that the successful drone is the strongest in flight, the only one in fact that is able to overtake the queen. Maeterlinck states that mating takes place "in the blue empyrean, remote from the haunts of birds, that would otherwise profane the ceremony," but it is clear that he is not writing from personal observation. E. L. Pratt (Swarthmore) actually saw mating occur, within a few inches of the ground, a few feet from the hive that the queen afterwards entered, and he states (Gleanings for 1904) that the flight of the drone was ten times as rapid as that of the queen.

The very general belief that queens mate at a high elevation to a drone whose power of flight is his only qualification has tended to eliminate from our minds the possibility that sexual selection may play a very important part in the mating of the queen. Do we not find, however, that yellow queens preferably mate with black drones, and vice versa? Cheshire wrote: "Many years ago, when bees were few about me, I placed twenty pure queen-cells in as many stocks. I had abundance of Ligurian drones, and none of any other race—nineteen of the queens crossed." C. N. Abbott, first editor of the British Bee Journal, in a footnote to his edition of Dzierzon's "Rational Beekeeping," writes: "There is little doubt but that the queen is exceedingly particular in her choice of a mate, and is apparently very averse to mating with one of her own kin. With twenty Ligurian stocks, each containing plenty of drones, and one stock of other bees, also having drones, the probability is that of twenty young Ligurian queens nineteen would mate with drones of non-Ligurian stock—at least it has always been so in our experience—tending to the belief that 'natural selection' is more than a myth, even in bees."

The drone is specialized for powerful, long-sustained, and very rapid flight. He is welcome in any hive, and probably travels in his lifetime very far from the hive in which he was produced, for he can take the journey in relays. The result is that a mating queen is encompassed by an enormous superfluity of drones, most of which may have come from a great distance, and her choice is almost absolutely free. Mr. Sladen and I interfered with a primal law of bee nature, and compelled the queens to mate under conditions which were entirely abnormal. We can well believe that the operation may have been a very half-hearted and spiritless affair, possibly on both sides, and its evident imperfection is perhaps not to be wondered at. If this view be correct, it will be of great importance in future mating experiments to arrange that there may be available a sufficient variety of unrelated drones, in numbers also which will proportionately far exceed the nuclei at the mating station.

Aberdeen, Scotland.

## Cleaning Frames From Diseased Colonies

There has been much discussion as to the best way to clean frames from colonies of bees diseased with American foulbrood. H. C. Cook, of Omaha, Neb., has an arrangement which is well illustrated in the two photos shown herewith. A rack holds 20 Langstroth frames and fits nicely inside a galvanized boiler, which is closed with a tight cover. The frames are boiled in lye water for about 20 minutes, which is sufficient to remove all traces of honey and wax. One picture shows the boiler closed and the other shows it open, with the rack of frames setting across and the cover on end above the frames. At the right is shown a large pile of frames which have been cleaned by this method.

## Wiring

I have read Mr. Crane's article on wiring frames, in the January number and, like him, I believe that it is important to stretch the wires well. I tried several methods until I found the perfect one.

I use 4 vertical wires equally distant from one another, leaving but about a half inch between the end ones and the end bars of the frame. I weave the foundation between the wires, by placing it under the first, on top of the next, under the third and on the fourth, so that it is alternately to the right and to the left of the wires, two wires on each side of it. Then, with a hot imbedding spur, I sink the wires in the foundation. Neither cold nor heat can make the foundation fall out, nor sag.

Try my method and let me know what you think of it.

H. BELLESSORT.

France.

## Queen Cells

GOOD Dr. Miller, by digging up some things I once wrote, makes me appear to be more or less mixed in my preachments and practices. Well, I caught the trick of not knowing it all from him.

I will confess right here that the behavior of the bees and young queens toward cells of different ages is not always to be forecast, and I surmise that the reason is that we fail to judge the different ages correctly. Of course, if all the cells used in the experiments were artificially produced and hence of known ages, we would quickly get some definite information. But so far I have not had the time nor felt the necessity of making the necessary tests.

If I may be permitted to hide behind the genial doctor's favorite shield, let me say "in this locality" where we are seldom blessed with a honey-flood, bees are not so likely to throw an "afterswarm" when two cells of apparently the same age are left (after a first swarm, or when old queen was removed to prevent swarming, or for other reasons), but if, perchance, the young queen is lost in mating, the colony is pretty apt to become hopelessly queenless. If I

Rack holding twenty frames to fit in Cook's boiler for disinfecting foulbrood.

was located in a real honey country I might have to modify my opinions and practices.

In the case of two cells of nearly the same age, by which I mean as far as I can judge by the appearance of the "tips" where the bees have removed the surplus wax, leaving the fibrous cocoon showing, indicating that those cells are about ready to hatch, on the emerging of the first queen the other is usually destroyed. Where one ripe cell is left and one with a very young grub the bees usually let the latter mature until the first matured queen is mated and laying.

I am frank to confess that the whole thing is largely a rule of thumb and not an exact science, as it ought to be. But "second swarms" are so unusual with me, and as queens lost in mating are not unusual, I adopted a plan which I thought would safeguard the colony. If we could always control or forecast conditions we might be able to work more exactly. To the same conditions bees always react in the same way. When it seems otherwise we may rest assured we have failed to correctly analyze the conditions.

As to queens inheriting swarming impulse through being reared in a swarming colony, I am pleased that Doctor Miller and I are agreed that it is not so. As for the heredity of the swarm impulse in Carniolans, let me say it this way, doctor, and see if you do not agree: The Carniolans inherit a super-sensitiveness to heat and humidity, or more correctly, inherit a system adapted to the atmospheric conditions of high altitudes, and when we subject them to our conditions they react by swarming.

ARTHUR C. MILLER.

I offer most humble apologies for having held the foregoing in my hands for the past six months. My health has been such that the thought of writing a very few words has seemed burdensome.

I must confess it had not occurred to me that locality had anything to do with the rules and regulations of bees as to their treatment of queen cells, but of course it may have. Certainly, in this locality, if more than one mature queen cell were present I should expect one of two things to happen, either the first virgin emerging would destroy the others, or else these latter would be protected by the workers and the oldest virgin would issue with a swarm. And I cannot help wondering, Brother Miller, if lighter honey-flows should make your bees act differently, why light flows here would not have the same effect, for this locality is by no means a stranger to light flows, even if honey does sometimes come in a flood.

You say that where there are two cells of nearly the same age the second is usually destroyed upon the emerging of the first virgin. Here I think it is always destroyed unless a swarm issues. If a very young grub be in one cell, it may be destroyed in its tender youth, or it may be allowed to reach maturity, but not to continue longer.

As to Carniolans inheriting a super-sensitiveness that under certain conditions leads to swarming, I'm not learned enough to know. Anyhow, in the long run, that amounts to the same thing as saying that Carniolans inherit something that accounts for their swarming more than others; so there can hardly be any quarrel between us on that point.

C. C. MILLER.

## Professor Werner Dies

We have just received word of the death of Prof. H. R. Werner, of Ames, Iowa, on February 13, with pneumonia following influenza. Mr. Werner was a young man of promise and a careful student of some of the difficult problems relating to the honeybee. In the 1917 report of the State Apiarist of Iowa appeared a paper by Mr. Werner, "The Mechanism Which Determines Sex in the Honeybee," which attracted more than passing notice.

Mr. Werner obtained his B. S. and M. Ph. degrees at Franklin and Marshall College, and his M. S. degree at Princeton University. He leaves a small son of about one year of age, a daughter of three, together with a wife, to whom we extend our sincere sympathy.

## The Introduction of the Pound Package

By F. W. Osler

JUDGING by the number of queries in our journals it would seem that the proper manipulation of the pound package is somewhat of a stumbling block to the average beginner, yet when a few underlying principles of apiculture are understood the operation becomes one of the simplest. First, it must be understood that the unit in apiculture is one complete hive with a queen. This organized colony will care for its queen, raise brood, gather stores and fight to the death in the defense of its home. The individual bee loses its individuality in the colony. If it be hurt, sick or worn out, it is promptly discarded. Even the queen is superseded when her days of usefulness are ended; a new queen takes her place and the work of the colony continues with the one end in view, namely, the propagation of the species.

A pound package is a number of bees, sometimes taken from several colonies who have lost their home and queen, find themselves confined in a receptacle foreign to their natural conditions—nothing more than a disorganized mass of bees only too anxious to find a home after their strange experience.

The beginner in apiculture is at a loss to know how to organize or unify this force of bees. If the queen is in a separate cage he fears she will be balled, and if he opens the pound package the bees themselves might fly away or he himself be badly stung by the angry (?) bees.

The matter is really very simple, and a careful perusal of the following directions should clear away most of the trouble. Be sure to have the hive prepared before the expected arrival of the bees. If you are starting your first hive with foundation, put in full sheets on well wired frames (starters are poor economy, to say the least, and buying second-hand drawn comb should always be discouraged, as the danger of disease is too great). Three frames are enough for a pound package. Before introducing the bees mix up a solution of equal parts granulated sugar and water. Paint this on the side and top of the wire package until the bees are well fed. If the queen is in a separate cage, fasten the cage in between the top bars of the frames after removing the card covering the candy which fills the entrance to the cage. The frames should be pushed to one side with a division board following the third frame, the balance of the hive empty. Close the entrance to this empty space with a block of wood and stuff the remainder of the entrance tightly with grass; take a 5-pound honey pail and punch eight or ten holes in the cover; fill with a syrup made of equal parts of sugar and water; invert this over two 1-inch blocks of wood and place in the space not occupied with frames. This will give the bees a little food and help them to draw out their comb. Now take the pound package and cut the side out of it and shake the bees in the hive; if one or two fly out, it does not matter. Put on the cover and do not touch for at least three days.

If you examine the entrance to the hive next day you will find that the bees have made an entrance through the part stuffed with grass and are perhaps wandering aimlessly around on the alighting board, or may be taking short circular flights around the hive. They are simply getting acquainted with the new locality and should be left alone. After three days remove the queen cage. If the queen is still in the hive she may be released by removing the wire screen and letting her run out on top of the frames. Close the hive again for three more days, then examine the frames and if eggs and brood are found you may rest assured that everything is all right. No more frames should be added for at least thirty days, and then only one or two. These are placed to the outside of the three original frames and the bees will occupy them when needed. The splitting of brood should not be attempted by beginners, as a sudden change in the weather might mean a bad setback to the colony by the bees being unable to cover split brood.

Beginners usually injure a colony by persistent examinations. This should be avoided. Once a week is plenty to examine a colony, and a great deal can be learned by studying the activity at the entrance, without lifting the cover or disturbing the bees at all.

Canada.

# DR. MILLER'S ANSWERS

Answered by the Editor during the illness of Dr. Miller.

**If an addressed stamped envelope is enclosed with the questions asked, a copy of the reply to be published will be mailed to the enquirer. Some questions require too lengthy answers to be available in this department. In such case the enquirer will be referred to the proper authorities or treatises. In many cases if the enquirer will read the questions of the previous numbers he will find exactly what he seeks.**

### Transferring

1. I would like to know the best time to transfer bees from some old hives into new ones, and the best way to do it.

2. In placing hives on a bee-stand, how close together would you place the hives?
ILLINOIS.

Answers.—1. If your bees are in movable-frame hives, the only thing to do is to lift the combs from the old hive into the new one, placing the new hive on the exact spot occupied by the old one. If you have to transfer from box hives, you had better wait until fruit bloom. Then smoke the bees, overturn the hive, placing some empty box on its stand: drive the bees, by drumming, into another box and afterwards transfer all the combs containing worker brood into frames, fastening them in with either twine or wire clamps. Put the new hive on the stand, shaking onto it all the bees. You may also transfer by driving the bees out at swarming time, and hiving them into a movable-frame hive, setting the old hive by the side of the new one. In three weeks, when all the brood has hatched, all the remaining bees may be shaken in front of the new hive.

There is a great deal of careful labor required in transferring bees and if you wish to do much of it you had better get a good book of instructions. You will find explicit instructions in the Langstroth-Dadant book, pages 309 to 315. They are too lengthy to be given fully in the question department.

2. You may place the hives very close together. But for convenience it is better to place them in twos, 3 or 4 feet away from other colonies in the same row, and the rows about 10 feet apart. The location you can dispose of should determine the space you will use.

### Wintering

1. I keep ten of my colonies in the city, and in order to keep that number it is necessary for me to place them closely side by side, taking my chances on loss of queens. You recommend after a prime swarm comes off placing it on the old stand and putting the mother hive alongside of it for seven or eight days and then putting it in a new location. This is impracticable, on account of my colonies being so close together; would the same results follow by placing the mother hive on top of the new one facing the same direction, with a bottom-board between the two hives, of course?

2. Last year (1918-19), I made outside cases for each of my hives while on a former location, allowing about 4 inches space between the case and the hive bodies. I packed this space with chaff and my bees came through in great shape—very strong. That winter (1918-19) was a very mild winter. Last fall, on account of desiring to place them in the new location, I neglected to make cases for the new colonies and did not pack the old ones. This year we had the coldest weather we have experienced since 1893, the temperature dropping to 5 dgrees above zero during two nights and standing on an average of about 12 to 15 degrees above zero for two weeks. I was afraid I would lose some, if not all, of my colonies, but every hive came through and they are now working on the pussy willows. Our winters here are mostly rain, with temperature from 45 to 60 degrees, with perhaps a total period of two to four weeks when the temperature will drop to 32 and 20 above. Last winter, before I saw how my bees came through I had ordered some double-walled hives to use, in order to avoid the more cumbersome cases with the attendant packing, and the point I desire to make is, under these conditions, would you advise the use of a large hive like the modified Dadant (single-walled), without further protection, instead of the double-walled hive, where you wish to avoid swarming as much as possible?
WASHINGTON.

Answers.—1. The advice to place the old colony, which has cast a swarm, by the side of the swarm, is given in locations where the heat of summer induces the old colony to swarm again. If your location is, as I believe it is, with moderate temperature in summer, it is as well to leave it as nature dictates. There is a possibility of losing too many bees out of the old hive and having its brood chilled if you place either above or by the side of the other. It would fare just as well above the other as on the side.

2. We use the Dadant hive with very little more protection than you mention, here in this cold country, where the thermometer goes down to 20 degrees below. The results that you have had are secured here also, in spite of low temperatures, when the cold spells do not last more than a month without giving the bees a flight. The packing cases or outside cases have proven too expensive for us, although there are seasons when we would wish to have them. But the average season here is sufficiently irregular to give the bees a flight about once a month, in spite of the cold northern winds that come from time to time.

### Afterswarm

Last summer I had one swarm come out which I hived; then on the 9th day the bees came out in a big swarm, but went back in the hive again; did the same trick again on the 12th day. What was the trouble with them?
WISCONSIN.

Answer.—Have never seen anything of the kind, except with secondary swarms, or afterswarms, when the young queen goes out to mate. But it usually takes place before the 12th day. It is rarely a large swarm.

### Moving Bees—Aluminum Combs

1. Can bees be transported in a car 20 miles, and what part of the day would be the best for such work?

2. What time this spring would be the best to buy them?

3. Would you advise me to buy the aluminum combs, which I see advertised in your paper? Are they any better than others?

4. How far away from buildings should bees be kept?
MINNESOTA.

Answers.—1. Yes, and much further. In early spring it may be done at almost any time of the day, but early morning is best.

2. March, April or May. Sometime before fruit bloom.

3. Aluminum combs are still an experiment. They have some very good points and some defects. The pro and con will not be ascertained positively before they have 2 or 3 years of trial.

4. You may keep them right close to buildings, if the line of their flight does not interfere with people or animals. As a rule it is better to place them in the orchard, or along a fence, in the shade if possible. There should be no occasion for people or animals to pass within 50 feet of the front of the hives, unless there is some obstruction, such as a hedge or low shrubs in front of them.

### What Price to Pay for Bees

1. What is a fair price to pay for an ordinary swarm of bees in box hive?

2. What is a fair price to pay for an ordinary swarm of bees in standard hives?

3. Do you not think it best to requeen these swarms this spring?
ILLINOIS.

Answers.—1. The price of a swarm in a hive depends upon the strength of the swarm and the time of purchase. If by swarm you mean colony of bees in a box hive, it may be worth from $4 to $8, according to its size, its supplies in honey and the time at which you purchase it. The most favorable time to buy is spring.

2. In a movable-frame hive the value of the swarm depends upon the size of the hive and also the conditions enumerated above. A colony in 10-frame Langstroth hive is worth more than in 8-frame. A colony in Jumbo hive is also probably worth more than one in Langstroth hive, since the hive is larger. Besides, a question which is not raised in the case of box hives should be considered here. The colony in movable-frame hive may be pure Italians, or hybrids, or blacks. In box hives they are usually black bees. So a colony in movable-frame hive may be worth from $8 to $20. Straight or crooked combs will also make a difference. The value depends also somewhat on the demand.

3. That must be left to the judgment of the apiarist. The colonies that have vigorous, prolific Italian queens had better be left till after the honey crop without change. For the others, your judgment is better than mine.

### Beginner

1. When is the best time of the year to transfer bees from trees to hives? Should a person move hive soon after hiving, or leave it there awhile?

2. If you were going to start in the bee business anew what kind of hives would you prefer?

3. Which do you like the best, 8 or 10-frame hives?

4. Which would be the best for the beginner, to raise comb or extracted honey?

5. What are some good honey flowers?

6. When is the best time of the year to plant wild buckwheat and clover?

7. What is a good plan for removing bees from hollow trees or hives?

8. What style and size of smoker would you prefer, and what do you use for fuel?
KANSAS.

Answers.—1. Spring is the best time, because the hives are lighter. If you wanted to kill the bees for the honey, fall would be best. The hive may be moved just as soon as the bees have gathered together, as they are very much excited and will remember the new location more easily.

2. The deeper frames, no matter whose make.

3. Ten-frame hives are probably best.

4. Extracted honey requires less constant attention, after you have your supers built. You use the same supers over and over again.

5. In your State, alsike, white clover, sweet clover and wild field flowers.

6. Probably spring.

7. It depends upon the height at which the colony is located. If it is very high, you may break the tree in cutting it. Then the bees will have to be transferred at once. If the log can be cut so as to haul it home, follow the directions given in the text books for transferring.

8. The new Bingham bee smoker, about 3½-inch barrel. But they are all good. After lighting a fire in the smoker, any kind of dry wood will do, except pine. Dead limbs from shade trees in the apiary are as good as anything.

### Wintering—Aluminum Combs

1. I have a stand of bees that has only about 10 pounds of honey in it now; would like to know if that will winter them till the 1st of April, or do you think I will have to feed them before the first of April?

2. Would also like to know how many pounds of bees in a 3-frame nucleus, and if they will build up enough so as to make any surplus honey in one season?

3. Would like to know if you have any bees to sell, and the price you ask for them?

4. I am thinking of getting some aluminum honey combs and would like to have your opinion as to whether you think they are all right for using them as brood combs, and if you think the bees will winter over in them all right.
INDIANA.

Answers.—1. It may last through all right. So long as you can see sealed honey along the top bars there is no immediate cause for alarm. But bees will not do so well when there seems to be any approach to shortage.

2. Two pounds will do very well. In a good season they may yield a nice surplus. In a poor season they may need feeding.

3. I've nothing to sell.

4. Some speak very highly of these combs, but we will know more about them when they have been fully tried. You could easily try them on a small scale.

### Swarming—Queens

1. I have about as many swarms as I care for, and am interested in measures preventing swarming. I have a Hoffman hive. The brood chamber holds 10 frames. I want to remove one frame to give more room for bees, keep it out all summer and return it when fall flow begins. Would you advise me doing so?

2. Root, in his book on bees, says that introducing young queens at the beginning of the harvest would have a tendency to prevent swarming. Our main honey flow is white clover in June. Would I be right to introduce young queens for above purpose from May 1 to 15.

3. Is it advisable to buy select untested queens?
IOWA.

Answers.—1. It is not practical to remove one frame to give greater spacing and return it in the fall, because the bees will build out the cells at the top of the combs and fill them with honey and seal them at the end of the breeding season. So you will find it difficult to replace that comb. Better leave it out.

2. Introducing queens from May 1 to 15 is all right. The only trouble is in securing the queens. They are more in demand at that time and a little harder to secure.

3. It is always best to buy select queens if you can afford to pay the price. But a select untested is comparatively less valuable than a select tested, because the breeder has had no time to test her, and judges her only by her looks and a few days of laying.

### Full Sheets—Buying Nuclei

1. I have a colony of bees in a box which I expect to change to modern hives in the spring. I had thought it best to use full sheets of foundation in the new hive, also to use full sheets for any new swarms I might catch; but on page 44 of the February American Bee Journal, and by M. G. Dadant, it says: "Never give full sheets of foundation to a new swarm." Now will some of you please tell me how much, if any, foundation I should use in hiving a new swarm. Please remember, I have no drawn comb or anything except what I buy.

2. If I should buy some 2 or 3-frame nuclei with queens in them, enough bees on same to go ahead and do all right, would you advise buying nuclei or bees by the pound to start with.
MONTANA.

Answers.—1. It will be all right to give some full sheets of foundation to a new swarm if you give it also some already built combs. You say you have none. But you must have some in the hive that swarms, or perhaps in some hive which does not swarm. So you can readily exchange a few combs for sheets of foundation. The reason why M. G. Dadant advises not to give full sheets to a new swarm is that the bees usually load down the sheets under their weight in such a way as to break them almost at once. But if they are given combs already built, they will hang to those in preference and will not overload the foundation. If you cannot give the swarm some built combs, better hive it on narrow starters. Sometimes, when the weather is not hot, full sheets, well wired, will stand the weight of bees till they are built out. But it is not advisable to give beginners the advice to use them. When you transfer a colony in spring, it is all right to alternate full sheets of foundation with the transferred combs. In that case there is no danger of overloading them.

2. Three or four-frame nuclei are better than bees by the pound, because they have bees, queen, brood and combs, with probably a little honey. But when buying from far away bees by the pound are more economical.

### Ventilation

In order to get the extra ventilation claimed for the brood chambers with the 1½-inch spacing would not the bees be compelled to build their brood combs of the same thickness as they do in the 1⅜ spacing? Is it a fact that when you give them the wider spacing they make the cells deeper? In that case they would have no extra ventilation.
PENNSYLVANIA.

Answer.—The cells must be of just the proper depth for brood rearing. So wherever they rear brood, there is a wider spacing. But when the brood rearing is over and they use the cells for honey, they fill them so as to leave only a sufficient traveling space. So the cells are shallow when brood is reared and deep when full of honey. This is even the case, but to a less extent, with the narrow spacing. The advantage of the wider spacing is that it gives more room for ventilation during brood-rearing time and more honey over the cluster in winter. If you look at your brood combs during breeding time, you will see that all cells that have brood have been pared down to the proper depth for the queen to lay and for the brood to be capped over.

### Granulated Honey—European Foulbrood

1. I sold some honey to a grocery store and it granulated in a short time. Do beekeepers and bottlers ever put anything in honey to keep it from granulating so soon?

2. I strained my honey through a flour sack. Do you think that will take out all the wax, or is there any better way to strain it?

3. I was bothered with European foulbrood last year. I treated them with the Dr. C. C. Miller plan. At about what time in spring is the best time to start treating them, if there are any with the disease?

4. Would it be safe to use extracting supers from diseased colonies on those that do not have the disease, if the combs are free from honey? And how about combs that were not cleaned and contain a little honey? If honey contains disease it seems as if those that are treated by the Miller plan would get the disease again from the honey in the hive. What do you think about it?

5. Where do you suppose I could get a hydrometer for treating honey as explained on page 160 of the May, 1919, American Bee Journal?
ILLINOIS.

Answers.—1. No, there is nothing that you can put into honey and keep it pure, to prevent granulation. The most practical way is to heat the honey slightly and evaporate some of the water it contains. It would seem that this would make it granulate sooner, but it has just the opposite effect. Be sure not to overheat it or you will spoil its flavor. We prefer to educate the people in regard to granulation, though it is slow work.

2. No need of straining honey to get the wax out. Let it rest awhile and the wax particles will come to the top, when you can skim them off. We never strain our honey. But a flour sack strainer will take out the wax, though it is an endless job unless the honey is warm.

3. Look for disease just as soon as you can open the hives safely in the spring. Treat them when there are blossoms in the fields. Keep on looking for disease all summer long and treat when needed.

4. It is not at all probable that honey transmits European foulbrood as it does American. We are more or less at sea yet in this matter, and even our scientists acknowledge that they have much to learn. At any rate, there seems to be much less danger in combs and honey with European foulbrood than with American.

5. Any druggist can get a hydrometer for you. It will probably not be of the same make as those used in New Zealand, but you can easily post yourself by tests of very thick and very watery honey to begin with. After you find the high and the low points you are ready to test any honey that is produced.

### Honey Tree—Requeening

1. Will you kindly tell me the kind of tree you would advise me to get for a grove for a bee-yard? I want a fast-growing tree. Could you tell me where I could get them?

2. I am going to requeen six colonies of black bees with the Italians. Could you tell me where I could get the queens?
MICHIGAN.

Answers.—1. For Michigan I would recommend basswood. It is a good honey yielder and a fast growing tree, with fine foliage. You should find the young trees readily in the woods of your locality. Or perhaps your local nurseryman can supply you.

2. You should be safe in buying from any queen breeder who advertises in the magazines. But the old established ones are best, because they have already proven their fair dealings and the quality of their queens. Fakes generally disappear promptly.

### Bees on Shares

1. How is a bee-yard run on shares? If I start this year with 100 2-pound packages, under a contract to run three years, what would be a fair division of the crop? Owner will furnish bees and all supplies for the yard. I will do all work in management, harvesting the crop, packing for winter, etc; bees to be wintered outside in individual packing cases? If yard is run for increase as well as for honey should I share in the increase, as well as the honey, provided that it was run for honey only, on the last year of the contract?
ONTARIO.

Answers.—1. We used to take bees on shares, long ago, at different times. The conditions were that the owner was to furnish everything and we were to do all the work. The crop was divided into halves. But if sections or other supplies were furnished, we paid for the share of them that we got.

2. We received half of the swarms, but paid for the hives which we got with them. When the swarms were hived by the owner, instead of by ourselves, he was paid for hiving them. Of course, we also got half of the artificial in-

crease, in the same way. Special conditions may require different arrangements. These matters should be agreed upon by the contracting parties themselves.

### Uniting—Transferring

1. I wintered my four stands of bees on a porch. The porch is closed on the north and west. It was a good dry place. I did not wrap them, as two were in old-fashioned bee-gums and two in 10-frame hives. They all seem to lose a good many bees, but lost more in the 10-frame than in the old bee-gums. They were covered with frost on the inside of the 10-frame ones. Only a few are left in the 10-frame. Will you tell me how I can unite the two 10-frame ones without their killing one another, as they did last year when I tried to unite them? In about a half hour the ones I put in were carried out dead.

2. Can I transfer the bees from the old straight gums to a 10-frame hive without taking the old hive to pieces, and how?

ILLINOIS.

Answers.—1. To unite bees do it in April, when they can fly once in a while. Then open the stronger of the two hives, so as to uncover the frames. Put a newspaper spread over the top of the hive, then put the body of the other hive over the newspaper and cover the pile with cover as usual. Smoke them a little when doing this. Usually they unite in this way without fighting. But it would be still better to kill the queen of one of the colonies first.

2. For transferring you will find directions in both the January and February question department of the American Bee Journal. But you ought to have a book of "First Lessons," in which you will find the transferring of bees and many other things in detail.

### Requeening—Swarm Prevention

1. I have a number of colonies of black bees which I desire to requeen as early as safe. In ordering queens from the South how soon would it be safe to requeen that the queens may not lose their efficiency?

2. To prevent swarming in comb-honey production, instead of cutting out queen cells will it be better to remove the queen and leave two cells of the same age? Would the bees destroy one of the virgins? Would it be safe to wait till the cells were capped?

INDIANA.

Answers.—1. Just as early as you can secure queens from the South it will do to change your queens. But do not order them to come before May 10. There is more loss and disappointment in early mailing of queens. Do not remove the old queens until the new queens are on hand.

2. Cutting out queen-cells does not always prevent swarming. If you leave two cells of the same age and the bees have a tendency to swarm, it will be sure to cause swarming, for the first one hatched will go to the bees. The bees would destroy one of them, if they did not want to swarm. In that case it would be of no benefit to have killed or removed the old queen. Of course, if you remove her with some brood and bees and make a division, you will very probably succeed in preventing swarming by leaving one queen-cell only.

### Foundation

1. I read an article in the American Bee Journal saying never to place foundation in the brood chamber. Where shall it be placed in order to be drawn out, and what should be placed in the empty space in the brood chamber?

2. Is it advisable to put full sheets into all the frames in a super?

MINNESOTA.

Answers.—1. That must be a misprint, or you misremember the advice. What was said was not to give full sheets of foundation to new swarms. But you can give them some full sheets of foundation if you give them some empty combs with the foundation, so that they will not put all the weight of the swarm at once on the foundation. It is a good plan to take a couple or three combs from some good colony, when hiving the swarm, to exchange for sheets of foundation. We aim to have some built combs on hand at the time of swarming. Foundation put into the brood chamber of a strong colony will be built out promptly and efficiently. Try it.

2. Yes, full sheets are always profitable to use, as they help secure straight worker comb and save a great deal of time to the bees.

### Increase—Swarming

1. I have two swarms of bees and would like to make an increase. How can I get an increase in colonies?

2. When is the best time to make an increase?

3. When is the best time to put them outdoors in spring? My bees are wintering good so far as I can see.

4. What time do bees swarm

5. How can I prevent them from swarming? If I clip the old queen's wings when I get them out, does that prevent swarming?

6. Will there be young queens in the hive in spring, besides the old queens?

WISCONSIN.

Answers.—1. Either by natural swarming or by dividing the colonies.

2. During the honey harvest, which comes in June-July in Wisconsin.

3. When the soft maple buds bloom, during a pleasant day of sunshine.

4. Same answer as No. 2.

5. It will not prevent them from swarming, but it will prevent the swarm from getting away. Swarm prevention is quite a problem and requires special management.

6. No, the bees do not raise young queens until they need them. You should read some beginner's bee book so as to inform yourself. It is impossible to give a whole treatise in the question and answer department.

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## Isle of Wight Disease

By Thos. F. Cobb

IN the December issue of the American Bee Journal you have commented adversely on the theory of "overwork" in connection with Isle of Wight disease, and advise that British beekeepers try the 16x10-inch or larger frame. Now, I have been using the 16x10-inch right along, and should be on nothing else, except for the difficulty of buying bees on anything else but "standards," and yet hold that "overwork" is the root of all evil, therefore it is clear our conception of the matter differs.

May I try to explain?

To begin with, it is not suggested that **only** the queen is overworked, though that may well be the case in certain instances, but stress has been laid on her, as she is the means of transmitting any harmful effects to future generations, while with the workers it is only a temporary affair, even if it results in their death.

You ask: "Are the chicks hatching from a prolific hen, properly fed, any weaker than those from an inactive hen, slightly fed?" My answer is that if you feed both hens "properly," then the chicks from the prolific hen **are** much weaker. The fact that the prolific strains are more difficult to hatch and rear is well known in the poultry world; the germ is far less virile, resulting in chicks that never hatch, or if they do, easily die.

I ask you to seek confirmation of this statement, as the hen is probably the nearest analogy we can get to the queen bee; but if we consider any other creature, the breeding of which man has studied, we always find they are unable to reproduce beyond a certain limit without harm resulting to parent and offspring.

Let us leave the queen, in dispute if you like, and turn to the workers. You will agree that it certainly is possible to overwork them. The feverish haste to rob or gather when there is no honey in the hive, and after a period without food, show conclusively it is possible to produce the most amazing excitement, during which they will work more than a normal colony. Remembering the powerful influence that feeding has in bee economy, is it not the most natural thing in the world to suppose the food fed to queen and larvæ, during the period of excitement, is not of the correct consistency? Perhaps it is weak, badly digested, or maybe lacks certain ingredients, in which case, when fed to the queen, would, of course, produce eggs not up to the standard, and when fed to larva, a weakened bee.

This form of overwork could exist just as easily in the small British standard hive as in the larger American sizes, and if you will cast your mind over any English bee literature you have read, has it not struck you that all manipulation advised tends to keep the bees **always** in that state of excitement referred to above, in very strong distinction to the more natural methods of you Americans? Emptying brood frames, feeding small quantities daily, spreading brood, etc., are not much in favor over your side, and even if you believed in them, with your huge apiaries it would be impossible to carry them out with anything like the thoroughness attained here.

But even supposing there was no feasible explanation at all of why overwork should have any connection with Isle of Wight or other disease, there is such a mass of **circumstantial evidence** pointing to a connection that I should still believe in it. I refer to such facts (more or less established) as the following:

Strongest colony frequently first to go.

Incidence highest in stocks that enter supers and lowest in skeps.

Isle of Wight often appears just after a spell of hot weather.

The peculiarities of "immune" strains, too, are worth considering. Bees come over from Holland and Italy, are dumped down in the midst of infection, absolutely immune, and yet after a short time, under the baneful influence of British beekeeping methods they become just as helpless as natives. Something has caused it. Can you think of a better explanation than "overwork?"

England.

If our correspondent is right, then there should be no disease in apiaries of old style skeps, which are allowed to breed according to their natural instincts. But, as far as we hear, the mortality by Isle of Wight disease is universal in the countries under its influence. Yet the British hives are almost universally of small size.

On the other hand, the people with large brood chambers should have depopulated apiaries. The evidence is exactly the reverse, in this vicinity at least.

Mr. Cobb asserts that the prolific strains of poultry are more difficult to hatch and rear. The most prolific strain in this part of the world is the Leghorn chicken, and it is also one of the hardiest. It is true that special food, intended to increase the laying has a tendency to weaken the race. We grant this. But no one has suggested that a special food should be prepared for bees. The large hives give opportunity for the full development of the queens' prolificness.

We have no experience with Isle of Wight disease, but if prolificness has any baneful influence, then it should also promote foulbrood. The practice does not agree with this theory, which is, after all, only a theory.

## Beekeeping in Santo Domingo

By H. Brenner

THE native help here is very good-natured, but they do not like to work, and one can hardly blame them, since nature produces abundantly almost everything they really need. And yet, with help like this I do not have any more serious trouble than at home. After they work in the apiaries a week or so under my direction they take their medicine without making much of a face.

I sometimes feel like folding my hands in my lap, when they start extracting, and enjoy the fun. It is easy to see why honey from the tropics has a bad reputation and brings so low a price. A great deal of the native honey comes from bees in hollow logs, petrol boxes, clay pipes and other receptacles. Even where they extract from frame hives, if they are not almost forcibly prevented, they take everything, good or bad, white or amber, green or ripe. In many cases the tropical honey ferments in the barrels before the steamer comes to load them. I have shown them the reason and have taught my hands the correct way to extract. When I first came here, I did not find a settling tank in a single apiary I visited. They would put the honey directly into barrels with all of its impurities.

With all the difficulties, we have had a wonderful success. Only the other day Dr. Maldonado said: "Look here, Mr. Brenner, last year you told me that we would need many new supplies this winter, but how could you expect me to believe then that any man with no trained help could create out of 40 run-down colonies of bees, in hollow logs, four apiaries containing nearly 600 colonies in first rate condition?" The question of supplies has, indeed, been our hardest problem. When we started we made supers out of gasoline and petrol boxes. The doctor has a small hand-mill and I have trained a native to make some first-class foundation. It does not compare with the Dadant foundation I used in Texas, but the bees accept it and draw out perfect combs.

I wish some of my friends who love nature could be here with me on some of my trips to the apiaries. Especially interesting are our trips by motor boat in nice weather. Mile upon mile we go up the wide estuary of the river and see no house or sign of man, only virgin forest and tangled bush. The white and blue water-fowl have a very grotesque appearance, nothing but neck, wings and legs, with seemingly no body. Swans ride gracefully out of our way and dozens of green parrots, with hoarse cries, whirl overhead.

## Bees Killed by Spraying

I had my entire apiary, consisting of 120 colonies in all, completely wiped out by spray poison during the season of 1919. Unless something is done to prevent spray poison the bee business is at an end in the Yakima valley. This is a heavy bearing apple section and the apple growers so far have had all the bees necessary in spite of the fact that they killed some every season. When the bees are all killed things may look different to them. However, it is hard to prevent killing the bees so long as they must spray.

The bees follow a spray machine and work on the wet leaves. The dry arsenate of lead we now use seems to be more fatal than when we used the paste. I have an orchard and helped to kill my own bees. It seems to me that something could be found to mix with the spray powder that the bees would not work on.

While I am one of the heavy losers, I am not the heaviest, as some have lost more bees than I.

J. H. STAFFORD.
Washington.

### Demonstration Field Meeting

A special meeting of the New Jersey Beekeepers' Association will be held in Edward C. Sharp's apiary, near White Horse, Mercer County, N. J., on Saturday, April 10, 1920, at 2 o'clock p. m., to demonstrate the results of ample winter packing.

Colonies which have been packed according to Government specifications will be unpacked and examined.

ELMER G. CARR, Sec-Treas.,
New Egypt, N. J.

Membership March 10, 1920, 409. Your help will make it 500.

### A Great Bee Country

This is a great honey producing section, on the Shoshone project. On my farm of 120 acres, this year, there will be 110 acres in sweet clover and alfalfa, enough material for twenty tons of honey. It seems that bees cannot be had. Perhaps you can help me to get in touch with someone who has the bees and equipment to utilize this nectar, benefit ourselves and help produce food for our countrymen.

E. D. RICHARDS,
Powell, Wyoming.

### Notice to Illinois Beekeepers

The membership dues in the Illinois Beekeepers' Association are $1.50 per year. This includes a copy of the cloth bound annual report, free bulletin service, including 25-word advertisement in bulletin, and subscription to choice of American Bee Journal, Gleanings or Domestic Beekeeper. If more than one journal is wanted, add 75 cents for each yearly subscription. Address the secretary at Mechanicsburg, Ill.

G. M. WITHROW, Sec'y.

## CLASSIFIED DEPARTMENT.

Advertisements in this department will be inserted for three cents per word, with no discounts. No classified advertisements accepted for less than 35 cents. Count each initial or number as one word.

Copy for this department must reach us not later than the 20th of the month preceding date of issue. If intended for classified department it should be so stated when advertisement is sent.

### BEES AND QUEENS

FOR SALE—I am in a position to sell a few thousand pounds of bees in packages. I have done extensive shipping, therefore I can properly prepare bees for shipment. I guarantee safe arrival and satisfaction.
Ward & Griswold, Modesto, Calif.

WANTED—To hear from beekeepers wanting queens from three-banded Italian stock which for the last 10 years made the largest average per colony of any bees in Indiana. All orders accepted to be filled after May 15.
Charles Kennard, Knightstown, Ind.

FOR SALE—Forty swarms of bees in good condition, free from disease, for quick sale, $8 per swarm.
Edw. Stanley, Mt. Carroll, Ill.

FOR SALE—Bright Italian queens, $1.50 each, $14 per dozen. Ready after April 15
T. J. Talley, Greenville, Ala., R. No. 4.

FOR SALE—Three-banded Italian queens, June 1 to October 1, untested $1.50, tested $2.50, select tested $3.50.
Wm. C. Young, Box 249, Des Plaines, Ill.

ITALIAN BEES (the kind that fill from 2 to 6 supers), for sale, in new 8 and 10-frame Root hives, at $12 and $15 per colony. Bees to be shipped by express. Queens after May 1, $2 each; $11 for 6. Single Comb Rhode Island Red hatching eggs (280-egg Trapnested strain). $2.50 per 15; $12 per 100.
Miss Lulu Goodwin, Mankato, Minn.

FOR SALE—Queens, nuclei, packages, colonies from our apiaries in Arkansas and Louisiana Write for prices now.
The Foster Honey & Mercantile Co.,
Boulder, Colo.

FOR SALE—We have a quantity of clover extracted honey, put up in new 60-lb. cans, two in a case, that we are offering for sale as follows: One 60-lb. can, $15.50; two 60-lb. cans at $30. For larger quantities ask for special price, stating amount you can use. This crop of honey was left upon the hives until thoroughly cured by the bees before extracting, and is of superior quality. A trial order will convince you.
E. D. Townsend & Sons, Northstar, Mich.

FOR SALE—Three-banded Italian queens, ready June 10. Untested only, 1, $1 50; 6, $8; doz., $15. Book orders now.
Ross B. Scott, Rt. No. 4, La Grange, Ind.

FOR SALE—Italian queens from best disease-resistant stock, untested $1.50 each, $15 per dozen. Larger orders, prices given on application.
O. M. Wallace,
Burton, Shiawassee County, Mich.

FOR SALE—3-frame nuclei for May delivery, $5 each, with untested Italian queen. We are also booking orders for Italian queens for June and balance of summer. Write for prices.
Irish Bros., Doctortown, Ga.

FOR SALE—200 3-frame nuclei, without queen, $5 each, delivered May 1.
James Johnson, Box 265, Pocahontas, Ark.

FOR SALE—200 2-frame nuclei ready for delivery from May 1 to 20, at $5.60 each, with young untested queen. Where tested queens are wanted, $6.50 each.
Cotton Belt Apiaries, Roxton,, Texas.

FOR SALE—My 3-banded Italians in brand new Root 10-frame hives at $12 per colony. They are dirt cheap.
Theodore N. Ross, Nashville, N. C.

FOR SALE—Superior California Queens—Western beekeepers may now secure our famous Italian queens at the following prices: One untested, $1.25; fifty untested. $57.50; one hundred untested, $100. Orders filled in rotation; first deliveries March 1, 1920.
Edson Apiaries, Gridley, Calif.

FOR SALE—Three-banded Italian bees and queens; untested queens, $1 50 each; tested, $2.50. Two-pound package bees, no queen, $4; add price of queen if wanted. Queens reared from best stock and by best methods. No disease. Safe arrival and satisfaction guaranteed.
J. L. Leath, Corinth, Miss.

FOR SALE—80 colonies, will sell in small lots, or all together.
W. D. Carder, Ludlow, Ky.

FOR SALE—Leather colored Italian queens, tested, until June 1, $2.50; after, $2; untested, $1.25; $13 per dozen. Root's goods, Root's prices.
A. W Yates,
15 Chapman St., Hartford, Conn.

ITALIAN QUEENS—Three-banded, select untested, guaranteed. Queen and drone mothers are chosen from colonies noted for honey production, hardiness, prolificness, gentleness, and perfect markings. Price $1.25 each; 12 or more, $1 each.
J. H. Haughey, Berrien Springs, Mich.

ITALIAN QUEENS OF WINDMERE will be ready in May. Untested, $1.25 each; six for $7. Tested, $2 each; select tested, $2.50 each. Now booking orders.
Prof. W. A. Matheny, Ohio University,
Athens, Ohio.

FOR SALE—Choice Iowa bred 3-banded untested Italian queens, after June 15, $1.75; July, $1.50; August and September, $1.25 each.
J. R. Coon, Ames, Iowa.

FOR SALE—3-banded Italian queens from best honey-gathering strain obtainable; (no disease). Untested queens, $1.25 each; 6, $6.50; 12, $12. Select untested, $1.50 each; 6, $9; 12, $18. Tested, $2.50 each. Safe arrival and satisfaction guaranteed. Your orders filled promptly.
W. T. Perdue & Sons,
R. No. 1, Fort Deposit, Ala.

FOR SALE—Highest grade 3-banded Italian queens, ready June 1. Queen and drone mothers are selected from stock of proven worth in hardiness, gentleness, honey production and disease-resisting qualities. Untested, each, $1.25; 6, $6.50; 12, $12; 50, $47.50; 100, $90. Your correspondence will receive prompt attention, and I guarantee satisfaction.
A. E. Crandall, Berlin, Conn.

BOOK YOUR ORDERS for QUEENS now—Goldens, $2; tested, $3; banded, $1.50; tested, $2.50; six or more 10 per cent less.
Clover Leaf Apiaries, Wahoo, Neb.

"QUALITY" THREE-BANDED ITALIANS from excellent stock; untested queens, 1, $1.60; 6 for $7.50; 12 for $13.50; 50 for $55; 100 for $100.
N. J. James,
1185 Bird Ave., San Jose, Calif.

MOTT'S Northern Bred Italian Queens— I have breeding mothers place in the south for April and early May queens. Plans "How to Introduce Queen and Increase," 25c. If you want beauty with the best of summer and winter laying birds, try a setting of my Golden Campines.
E. E. Mott, Glenwood, Mich.

FOR SALE—Package bees, dependable queens.
E. A. Harris, Albany, Ala.

FOR SALE—A. I. Root strain of resisting and honey-gathering, leather-colored Italian queens. Untested queens, $1.50 each, 25 or more $1.40. Tested, $2.50 each, 25 or more, $2.25. Select tested, $3. For larger amounts write.
A. J. Pinard, Morgan Hill, Calif.

FOR SALE—2,000 pounds of bees in pound packages, early.
H. E. Graham, Gause, Texas.

FOR SALE—Italian queens from some of the best stock in the United States, mailed as soon as hatched. Safe arrival guaranteed to any part of the United States and Canada. All queens mailed in improved safety introducing cages. Order early. Send for circular. Prices, April to October 1, 75c; 10, $6; 50, $27.50.
James. McKee, Riverside, Calif

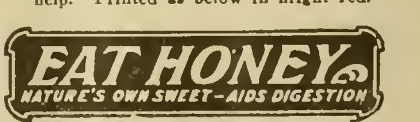
1920 PRICES on nuclei and queens, Miller strain. Queens, untested, $1.60 each, $16 per doz.; tested, $2.00 each, $22 per doz. One-frame nuclei, $3; two-frame, $5; three-frame $6.50, without queens, f. o. b. Mason, Miss. Five per cent discount in lots of 25 or more. We have never had any bee or brood disease here. Will have no queens except with nuclei, until June 1. Safe arrival and satisfaction guaranteed.
Geo. A. Hummer & Sons Prairie Point, Miss.

HARDY Italian queens No bees
W. G. Lauver, Middletown, Pa.

1920 PRICES for "She Suits Me" queens. Untested Italian queen, from May 15 to June 16, $1.50 each. After June 15, $1.30 each; $12.50 for ten; $1.10 each for 25 or more.
Allen Latham, Norwichtown, Conn.

**Don't stop advertising.**

because honey is high. Make it more in demand, so the price will stay where it is. Little stickers on your letters, papers, etc., will help. Printed as below in bright red.



Price of 1,000 gummed, 50c

**American Bee Journal Hamilton, Illinois**

FOR SALE—2-frame nuclei, only $5; if queen is wanted add $1.25; May 15 to June 15.
L. A Schwab, Imboden, Ark. Box 335.

FOR SALE—After April 15, our golden Italian queens, untested, one $1.50 or $15 per doz.; select untested, one, $1.75 or $18 per doz.; tested, $3 each. Safe arrival guaranteed.
Tillery Bros.,
R. 5, Georgiana, Ala.

FOR SALE—Goldens that are true to name. Select untested, one, $1.50; six, $7.50; 12, $13.50; 50, $55; 100, $100.
Garden City Apiaries, San Jose, Calif.

FOR SALE—Golden and three-band queens. Untested, April, May and June delivery, $1.25 each; $12.50 per doz. Satisfaction.
R. O. Cox, Rt. 4, Greenville, Ala.

BEES BY THE POUND, ALSO QUEENS—Booking orders now. Free circular gives prices, etc. See larger ad elsewhere.
Nueces County Apiaries, Calallen, Texas,
E. B. Ault, Prop.

BEES AND QUEENS from my New Jersey apiary.
J. H. M. Cook,
1Atf 84 Cortland St., New York City.

## HONEY AND BEESWAX

FOR SALE—We have a limited amount of our crop white clover, extracted basswood honey, all packed in new 60-lb. cans, 2 to the case. Write for prices.
D. R. Townsend, Northstar, Mich.

FOR SALE—Clover and buckwheat honey in any style container (glass or tin). Let us quote you.
The Deroy Taylor Co.,
Newark, N. Y.

WANTED—White clover or light extracted honey. Send sample; state how honey is put up and lowest cash price delivered at Monroe; also buy beeswax.
E. B. Rosa, Monroe, Wis.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendering.
Fred W. Muth Co.,
204 Walnut St., Cincinnati, Ohio.

FOR SALE—10,000 lbs of fine clover-alfalfa extracted honey in new 60 lb. cans, 2 in case. An exceptionally fine lot of white honey. Interested parties address
Custer Battlefield Apiaries, Hardin, Mont.

FOR SALE—1,200 lbs. white clover honey in 60-lb cans, 22½c per lb.
Herbert Kietzer, Vernon Center, Minn.

FOR SALE—24 cases buckwheat comb honey, No. 1 quality, $6 per case; 12 cases mixed, not all capped, $4 per case, 6 cases to carrier; clear clover extracted, 25c per pound; buckwheat and clover mixed, 20c, 2 60-pound cans to case.
H. G. Quirin, Bellevue, O.

## FOR SALE

FOR SALE—Cedar or pine dovetailed hives; also full line of supplies, including Dadant's foundation. Write for catalog.
A. E. Burdick, Sunnyside, Wash.

FOR SALE—"Superior" Foundation (Weed process). Quality and service unexcelled.
Superior Honey Co., Ogden, Utah.

FOR SALE—20-acre farm, 200 colonies bees with equipment; one acre ginseng and goldenseal; excellent soil, buildings and bee location.
L. Francisco, Moon Rt., Dancy, Wis.

FOR SALE—About 50 colonies of bees, mostly Italians; also complete hives, supers, comb and extracted, and other used equipment. Bees and supplies are located near Lansing, Mich. Duplicate volumes A. B. J. and Gleanings also for sale or exchange.
F. Eric Millen,
O. A. C., Guelph, Ontario, Canada.

FOR SALE—Yellow biennial sweet clover seed; hulled at 30c a pound, unhulled at 18c a pound. This is the Big Yellow, and great for bees. All seed sent on money back guarantee if not satisfactory..
F. Rasmussen, Rockville, Neb.

FOR SALE—Eleven months Rufus Red Belgian does, bred, $3 each.
Erwin's Stock Farm, Walled Lake, Mich.

FOR SALE—22-calibre Remington automatic rifle, slightly used, $25.
Thos. Cordner, Rt. 7, Sparta, Wis.

FOR SALE—Good bee location, about 75 miles south of St. Louis, 40 acres unimproved timber land in the fruit belt of eastern Missouri; $400 buys it if taken at once.
Eugene Neuman, Prescott, Arizona.

FOR SALE—160 acres Oklahoma farm land in oil region; raises good wheat, oats, cotton, etc.
Frank Durkee, owner,
Rt. 4, Ottawa, Ill.

FOR SALE—We are closing out our bee business consisting of 90 colonies of bees in Dadant hives, complete operating equipment and 88 empty Dadant hives.
Baxter Bros., Leavenworth, Kans.

FOR SALE—7-room house, 1 acre of land in good condition, and 50 colonies of bees; 30 minutes ride from Chicago.
P. Greenwall, 82 2nd St., Elmhurst, Ill.

## WANTED

WANTED—Your old combs, cappings and slumgum to render into beeswax. We get enough more wax with our well equipped presses to pay for our work.
Dadant & Sons, Hamilton, Ill.

WANTED—200 or less colonies of bees (any style hive) for spring delivery. Address.
A. W. Smith, Birmingham, Mich.

WANTED—Your order for "Superior" Foundation. Prompt shipments at right prices.
Superior Honey Co., Ogden, Utah.

WANTED—A 2 or 4 frame second-hand reversible extractor; also steam uncapping knife.
Maggie Stripling,
Altamaha, Ga.

WANTED—Bees. Will buy any number; must be free from disease, strong, healthy colonies in good hives. What have you for sale? Give lowest prices and state number for sale.
A. A. Rieff, St. Peter, Minn.

WANTED—Undamaged copies of February, 1920 American Bee Journal. Will pay 10c a piece. When mailing wrap so the entire copy is covered.
American Bee Journal,
Hamilton, Ill.

WANTED—Extracted honey in white and amber grades. State lowest price; how packed. Send sample.
Harmony Bee & Honey Co.,
White Bear Lake, Minn.

WANTED — Hershiser wax press. Give price and condition.
O. W. Bedell, Earlville, N. Y.

WANTED—Opportunity by man with some capital to enter into partnership or buy out apiary with farm and home.
L. K. Edgett, R. D. No. 3, Titusville, Pa.

WANTED—5 to 100 colonies of bees.
R. Stecher, 1240 Barry Ave, Chicago, Ill.

WANTED—A few cases extracted honey.
Edw. A. Winkler, Joliet, Ill.

## SITUATIONS

WANTED—One experienced man, and students or helpers, in our large bee business; good chance to learn. Modern equipment and outfit, including auto truck; located near summer resorts. Write, giving age, height, weight, experience, reference and wages wanted.
W. A. Latshaw Co., Clarion, Mich.

WANTED—Experienced beeman. If suits and stays 6 months will pay his fare one way. Must know about bee diseases. Must give references.
F. P., care American Bee Journal.

WANTED—Situation by a teacher with experience with bees, beginning May 25
M. M. Rex, Valparaiso, Ind.

WANTED—Position with extensive beekeeper, by man 33, with some beekeeping experience. Available early in April.
Herbert M. Bachman,
5053 Grand Blvd., Chicago, Ill.

WANTED—Experienced man for comb honey. Give age, experience and salary expected.
B. F. Smith, Jr., Fromberg, Mont.

WANTED—Will need more help. Refer to my advertisement February and March; 1,000 colonies. Write fully.
E. F. Atwater, Meridian Idaho. Former Special Field Agent in Beekeeping, U. S. Department Agriculture, California, Arizona and New Mexico.

WANTED—Man for season of 1920 to work with bees. State age, experience and wages. We furnish board. Opportunity for permanent situation to right man. Also want man to work in shop, put up honey and do general shop work and make deliveries.
The Rocky Mountain Bee Co.,
Box 1319, Billings, Mont.

WANTED—One or two good queen-rearing men to begin work February 15, 1920.
Nueces County Apiaries, Calallen, Texas.

## SUPPLIES

FOR SALE—Two uncapping knives; 22 Winchester; 32 revolver.
Edw. Hogan, Stanley, N. Y.

FLORIDA BEES AND QUEENS

The first part of April I will be fully ready to fill orders for queens and bees as follows: Two-frame nuclei with untested queen, $6; untested queens, $1.50 each; tested, $2. From my long-tested and best Italian stock.

BEEKEEPERS' SUPPLIES—DADANT'S FOUNDATION

A complete stock of everything for the Dixie beekeepers, right here at home. My cypress catalog of cypress hives and hive parts will interest you in prices.

DIXIE BEEKEEPER

This monthly publication tells of Dixie as a bee country and how we are keeping bees here; $1 a year. Sample copy free.

J. J. WILDER, Waycross, Georgia

EAGLE "MIKADO" PENCIL No. 174

174
EAGLE MIKADO
No 2
EAGLE

Regular Length, 7 inches

For Sale at your Dealer. Made in five grades

Conceded to be the Finest Pencil made for general use.

EAGLE PENCIL COMPANY, NEW YORK

FOR SALE—Good second-hand double-deck comb-honey shipping cases for 4¼x4¼x1⅞ sections, 25 cents per case, f. o. b. Cincinnati; terms cash with order.
C. H. W. Weber & Co.,
2146 Central Ave., Cincinnati, O.

FOR SALE—Good second-hand empty 60-lb honey cans, two cans to the case, at 60c per case f. o. b. Cincinnati. Terms, cash with order.
C. H. WEBER & CO.,
2146 Central Ave., Cincinnati, O.

FOR SALE—First-class light power equipment for making hives and frames, A1 condition engine, 2 saw tables, planer, 4-spindle boring machine for piercing frames, line shafting, pulleys, belts, saws, dado heads.
F. D. Bowers, Sugar Grove, Pa.

FOR SALE—8 and 10-frame hive bodies, covers and bottoms, Hoffman brood frames. I make them and can save you money. Odd size hives and frames made to order. Write for price list. F. D. Bowers, Sugar Grove, Pa.

SEND us a list of goods wanted and will quote you lowest prices. We are the money-saving house. Price list free. Try us.
H. S. Duby & Son, St. Anne, Ill.

FOR SALE—259 shallow extracting supers, 9 excluders; a bargain; write.
James McKee, Riverside, Calif.

FOR SALE—Thirty 10-frame hives with metal covers. Thos. Cordner, Sparta, Wis.

I MANUFACTURE cypress bee hives, and sell Lewis' beeware. Write for booklet.
J. Tom White, Dublin, Ga.

## MISCELLANEOUS

WANTED—Beeswax, old combs and cappings to render on shares. Will pay highest market price and buy your share of the beeswax.
F. J. Rettig & Sons, Wabash, Ind.

WRITE for shipping tags and our prices for rendering your old combs, cappings, etc. We guarantee a first-class job.
The Deroy Taylor Co., Newark, N. Y.

FOR SALE—California Wonder Corn for seed, doubles yield. Send for circular.
James McKee, Riverside, Calif.

$48 incubator, $20; exchange for extractor, saw table or offers.
Lorenzo Clark, Winona, Minn.

FOR SALE—100 early cabbage or 100 early tomato plants, 50 cents; 100 sweet mango plants, $1, post paid.
J. F. Michael, R. 1, Winchester, Ind.

FOR SALE—Winchester rifle, 32 calibre, good condition, $12. Will take bees in trade.
Kenneth Cook, McGrann, Pa.

FOR SALE—Klondike strawberry plants, 60c per hundred, one Italian queen with each $10 order. B. O. Brown, Kingsport, Tenn., R. 3.

FOR SALE—Silver Spangled Hamburg eggs and fine cockerels.
Elias Fox, Union Center, Wis.

BLACK SIBERIAN HARES—Enormous sizes, delicious meat and beautiful fur. Write for information and prices.
Siberian Fur Farm, Hamilton, Canada.

FOR SALE OR EXCHANGE—My entire Rabbitry, including hutches, 2 New Zealand bucks, 2 New Zealand does, 2 Belgian does, 5 New Zealand young 4 months old; one of Belgian does has litter of 8. Will take $50 for entire lot, or will exchange for bees in good hives. F. J. Shotwell, Martelle, Iowa.

# TWO NEW BEE BOOKS

**We have just completed publication of two new bee books, special in their field, and for which there has been insistent demand**

# AMERICAN HONEY PLANTS

### Including those important to the beekeeper as sources of pollen

### By FRANK C. PELLETT

This book is the result of many years of personal investigation and travel from New England to California and from Canada to Florida and Texas to secure first-hand information on the sources of nectar and pollen. It is splendidly illustrated with 156 photographs, and describes the honey plants of all parts of America. A list of the honey plants of each State is given separately and the plants described in alphabetical order.

A knowledge of the flora is important to every beekeeper, as it is often possible to double the crop by moving an apiary but a few miles. This book is written by an expert beekeeper and a competent observer, only after having visited apiaries in most of the important honey-producing districts.
300 large 8vo pages. Enameled paper. Price $2.50.

# OUTAPIARIES

### By M. G. DADANT

The development of beekeeping has been in direct relation to the extension of outyards in most localities. The Dadant family has kept bees extensively in the same locality for three generations and the author of this book has spent his life in commercial honey production.

The book deals with the business of beekeeping on a large scale, and describes the methods and practice of the most successful beemen. Special chapters on honey houses and equipment, autos and trucks and similar apparatus required by the extensive honey producer.

125 pages, 50 illustrations. Price $1.

Add 75 cents to the price of either of the above books and get the book and the American Bee Journal for a full year.

**AMERICAN BEE JOURNAL, Hamilton, Illinois**

## PRICES OF QUEENS

| | Nov. 1 to June 1 | | | June 1 to Nov. 1 | | |
|---|---|---|---|---|---|---|
| | 1 | 6 | 12 | 1 | 6 | 12 |
| Untested | $2.00 | $9.00 | $16.80 | $1.50 | $8.00 | $14.50 |
| Select untested | 2.25 | 10.50 | 18.00 | 2.00 | 9.50 | 16.00 |
| Tested | 3.00 | 16.50 | 30.00 | 2.50 | 12.00 | 22.00 |
| Select tested | 3.50 | 19.50 | 36.00 | 3.00 | 16.50 | 30.00 |

**Breeders $7.50 to $15.00**

Queens for export will be carefully packed in long-distance cages, but safe delivery is not guaranteed.

"The queen that I got from you last season made honey when the other bees were taking lunch to the fields with them (when they went at all)". H. M. TICHENOR, Centertown, Ky.

No Nuclei, Full Colonies or Pound Packages.

**BEN G. DAVIS, Spring Hill, Tenn.**

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# MARSHFIELD GOODS

## BEEKEEPERS

We manufacture millions of **sections** every year that are as good as the best. The **cheapest** for the **quality; best** for the price. If you buy them once, you will buy again.

We also manufacture **hives, brood-frames, section holders** and **shipping cases.**

Our Catalog is free for the asking

**MARSHFIELD MFG. CO., Marshfield, Wis.**

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## BEEKEEPERS' SUPPLIES—QUALITY AND SERVICE

Now is the time to order your season's supply of Bee Material so as to have them ready for the honey flow. For lack of hives and other goods, you cannot afford to let your bees fly away, **bees are valuable.** We have everything required for practical beekeeping. Our goods for ideal of quality, quality of workmanship. Our 1920 catalog is now ready to send out, send for one, it is full of good stuff.

**AUGUST LOTZ CO., Boyd, Wis.**

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# BEE SUPPLIES

**FALCON LINE**

Best goods made. Get our big discount sheet before buying.

**C. C. CLEMONS BEE SUPPLY COMPANY**
128 Grand Ave.
Kansas City Mo.

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# PORTER BEE ESCAPE SAVES HONEY TIME MONEY

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BEE ESCAPE
PATENTED

For sale by all dealers.
If no dealer, write factory
**R. & E. C. PORTER, MFRS.**
Lewistown, Illinois, U. S. A.
(Please mention Am. Bee Journal when writing)

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Send for Catalogue of Honey Labels and Stationery.
American Bee Journal

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# BEES

We furnish full colonies of Italian bees in double-walled hives, single-walled hives, shipping boxes and 3-frame nucleus colonies.

**I. J. STRINGHAM, Glen Cove, N. Y.**
NASSAU, CO.

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## WESTERN BEEKEEPERS!

We handle the finest line of bee supplies. Send for our 68-page catalog. Our prices will interest you.

**The Colorado Honey Producers' Association, 1424 Market St., Denver, Colo.**

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### ATTRACTIVE CLOTHES

Do not make the man, but they add greatly to his appearance.
Just so with your honey. It must have quality, but should have a neat package and an attractive label.
We can furnish the label. In many sizes and shapes suitable to fit any container.
Write for our new price list of honey labels and stationery.
**American Bee Journal, Hamilton, Ills.**

## QUEENS WITH A REPUTATION—QUEENS

No doubt you would like to make a bumper honey crop this year. See that every colony has the very best queen obtainable; there's no better way of insuring the utmost honey from each hive than buying some of my queens to replace those that are not up to the scratch. With expensive equipment and high-priced labor you cannot afford to nurse those weak colonies, that somehow don't build up with the rest of the apiary, for the lack of prolific queens.

None of my queens are "baby nuclei" reared; consider what this may mean to you. Doolittle's stock speaks for itself, and I can supply your wants at the following prices:

| | Before July 1. | | | July 1 to Nov. 1. | | |
|---|---|---|---|---|---|---|
| | 1 | 6 | 12 | 1 | 6 | 12 |
| Untested | 2.00 | $8.50 | $15.00 | $1.25 | $6.50 | $11.50 |
| Select Untested | 2.25 | 9.50 | 18.00 | 1.50 | 7.50 | 13.00 |
| Tested | 3.00 | 16.50 | 30.00 | 2.00 | 10.00 | 18.50 |
| Select Tested | 3.50 | 19.50 | 35.00 | 2.75 | 15.00 | 27.00 |

Terms strictly cash; one-fourth with order, balance just before shipping. Safe arrival and satisfaction guaranteed, or your money back. Absolutely no disease.

**JENSEN'S APIARIES, PENN, Lowndes Co., Miss.**

## BEEKEEPERS ATTENTION

You can make your business more profitable and easier to handle through the proper use of modern equipment. This is supplied in LEWIS BEEWARE by

**WESTERN HONEY PRODUCERS**
**SIOUX CITY, IOWA**

SEND LIST OF YOUR NEEDS OR REQUEST FOR NEW CATALOG TO DEPT. B

## QUEENS OF QUALITY—Farmer's Queens Speak for Themselves

MR. BEEKEEPER: Why not get a good queen while you are buying? Farmer's queens produce workers that fill the super quickly with honey that is most delicious to eat. They are bred for honey production strictly. Shipping season is here; now is your time to head your colonies with a good queen. One that will keep the hive chock full of bees at all times, makes the biggest yields of honey, sting less, and look the prettiest. Our strain of Italians will go a long distance after nectar. In a high degree we breed from imported stock from Italy, the very best obtainable for honey gathering. They are very resistant to disease, gentle and beautiful, not given to swarming, hardy, long-lived.

Untested queens ---------------- 1, $1.50; 6, $7.50; 12, $13.50
Select untested queens ---------- 1, $1.75; 6, $9.00; 12, $16.00

You take no risk when you buy our queens, for we guarantee them to reach you safely, to be purely mated; and we leave the word satisfaction to the purchaser. Why we can do this is because we know what we are going to send out. Purchaser is the sole judge of our queens; if they don't give satisfaction, return them and your money will be refunded.

References as to our standing: Bank of Ramer, Ramer, Ala. Shipment made on time.

**THE FARMER APIARIES, Ramer, Alabama** Where the Good Queens Come From

## QUEENS, SELECT THREE-BANDED ITALIANS

Reared from the best mothers and mated to select drones.

**Prices of Queens**

| | May 1st to June 1st | | | June 1st to July 1st | | | July 1st to Nov. 1st | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1 | 6 | 12 | 1 | 6 | 12 | 1 | 6 | 12 |
| Untested | $2.00 | $ 9.00 | $16.80 | $1.50 | $ 8.50 | $14.50 | $1.30 | $ 7.50 | $13.50 |
| Select Untested | 2.25 | 10.50 | 18.00 | 2.00 | 9.50 | 16.00 | 1.75 | 8.50 | 15.00 |
| Tested | 3.00 | 16.50 | 30.00 | 2.50 | 12.00 | 22 00 | 2.00 | 10.00 | 18.50 |
| Select Tested | 3.50 | 19.50 | 36.00 | 3.00 | 165.0 | 30.00 | 2.75 | 15.00 | 27.00 |

Orders booked now for May delivery. Pure mating, safe arrival and entire satisfaction guaranteed. Wings clipped free. Write for descriptive circular.

**HARDIN S. FOSTER, Columbia, Tenn.**

# Crop and Market Report

Compiled by M. G. Dadant

For our April report we asked the following questions of reporters: 1. How much honey is left on hand?. 2. At what price is it being sold or held?. 3. What is the winter loss, so far? 4. Will there be losses from starvation? 5. What are the crop prospects? 6. How many bees, compared to last year?

## HONEY ON HAND

Throughout the entire East beekeepers report practically all honey sold. Exceptions are one large beekeeper in the South reporting one-third of his crop still on hand. The Central West, Texas, Colorado, New Mexico and Arizona, are well sold out. Utah reports three or four cars on hand; California has possibly 10 per cent of its honey on hand, but moving well.

It is in the Northwest that the biggest amount of honey is still held. Montana reports possibly 75 per cent of its honey unsold, while Idaho estimates are that there are still 30 cars to be sold.

## PRICES

For local sales, the honey price is still maintained at its high level. Beekeepers who sell near at home have not had to shade prices to get rid of their honey. The jobbing and carload price is dropping some. Best honey is now being quoted at 17 and 18 cents. One large buyer reports being able to buy for 16 cents, honey which he paid 22 cents for in the fall. The foreign demand, owing to the unfavorable exchange, is nil, so that all honey has to be marketed in the domestic centers. Some beekeepers are still holding for 20 cents in car lots, but most of them would be willing to sell at 17 cents f. o. b. shipping point.

## WINTER LOSSES—Starvation

It is yet a little early to give winter losses. Yet there is a strong undercurrent of feeling that the losses will be extra heavy. The North has had a long, unbroken winter, bees often being shut in four months without a flight. Winter cellared bees will do well, but losses already reported are heavy, especially in New England, New Jersey, New York, Pennsylvania, Ohio, Michigan, Wisconsin, Minnesota and parts of Iowa and Nebraska. A little farther south, where bees had a flight or two during the winter, the loss will be normal, probably, except for starvation, which also has been above ordinary, owing to light stores in the fall and shortage of sugar.

Sugar seems easier to get this spring, and we advise all beekeepers to get in touch immediately, either through local grocers or direct, with their nearest wholesale grocer, who should be able to supply them. We have been able to get no satisfaction by writing direct to sugar companies, or to the sugar board. We have obtained sugar for our own bees at wholesale for about 17 cents f. o. b. here.

## CROP PROSPECTS

The long closed winter of the North has been attended by many snows, the clover is well covered and should have abundant moisture when spring opens. Most clover localities report fair to good prospects. Illinois, Indiana and parts of Iowa and Missouri are exceptions. In the South conditions are normal, while Texas expects a better crop than usual.

In the mountain states and the Northwest it is yet too early to make predictions. California reports good prospects for orange, with rather discouraging reports for the sage, on account of lack of rain. Late rains have helped improve the situation.

## NUMBER OF BEES

In some scattered localities there will be considerable increase. In most, however, it is doubtful whether the increase will more than make up for winter losses.

## HONEY MOVEMENTS

The Government report from the Bureau of Markets under date of March 1 reports honey movements as slow, with but little call by the jobber. Very little comb honey is left on hand. Whether all of the 1919 crop of honey will move before the new crop is ready is doubtful.

It hardly seems that honey would maintain the high level of 1919 during the fall of 1920. Sugar seems to be easier and is being quoted for fall delivery at a figure reduced very much over present levels. Our advice would be, wherever possible, to maintain and encourage the local markets.

Organization will help. The three large co-operative organizations of Colorado, Texas and California have had very little trouble disposing of the crop, and at excellent prices. The Texas honey was all sold at home, and some is being imported to fill the demand.

"falcon"

I am a "Falcon" bee

"falcon"

I live in a Falcon" hive.

I am gentle and contented. I love to work in my home because everything is just as I like it.

The hive body is well constructed; that is why our honey crop is always plentiful.

Our queen is a "Falcon" queen—she is a three-banded Italian of pure healthy stock.

We all agree that our colony is successful, but so are all the "Falcon" hives in our apiary.

The other bees tell me when we meet in the fields.

Send at once for a "Falcon" queen, a hive or any bee supplies you need. Don't delay. Spring will soon be here.

"Falcon" bees and supplies always give the best results.

**I KNOW BECAUSE—I AM A "FALCON" BEE**

**W. T. FALCONER MANUFACTURING CO., Falconer, N. Y.**

**Where the best Bee Hives come from**

# FOREHAND'S THREE BANDS

## THE THRIFTY KIND

We have been breeding these queens for the market for over a quarter of a century. They are bred from the imported Italians, but by select breeding we have brightened the color and retained the good qualities of their mothers.

After years of select breeding we have built up a strain of bees that are **surpassed by none, but superior to many.** Our queens are thrifty, hardy, gentle and beautiful.

We guarantee pure mating, safe arrival and satisfaction.

**PRICES: After April to July 1**

Untested—1, $1.50; 6, $7.50; 12, $13.50; 100, $1 each.
Select untested—1, $1.75; 6, $9; 12, $16.50; 100, $1.25 each.
Tested—1, $2.50; 6, $13; 12, $24.50; 100, $2 each.
Select tested—1, $4; 6, $22; 12, $41.50; 100, $3.35 each.

**Pound Bees from April 15 to June 30**

One-pound package—1, $3; 25 or more, $2.75.
Two-pound package—1, $5; 25 or more, $4.60.
Three-pound package—1, $7; 25 o more, $6.45.
Add the price of the queen wanted.

**W. J. FOREHAND & SONS, The Bee Men**
**Fort Deposit, Alabama**

CHARLES MONDENG
Bee Keepers' Supply Mfg. Plant.

**A BIG STOCK OF**

# BEE SUPPLIES

ALL BOXED, ready to ship at once—thousands of Hoffman Frames; also Jumbo and Shallow Frames of all kinds—100 and 200 in a box. Big stock of Sections and fine polished Dovetailed Hives and Supers.

I can give you bargains. Send for a new price list. *I can save you money.*

**Will take your Beeswax in Trade at Highest Market Price**

**CHAS. MONDENG**
**159 Cedar Lake Road MINNEAPOLIS, MINN.**

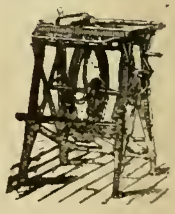
**EARLY ORDER DISCOUNTS WILL**

## Pay You to Buy Bee-Supplies Now

Thirty years' experience in making everything for the beekeeper. A large factory specially equipped for the purpose ensures goods of highest quality. Write for our illustrated catalog today.

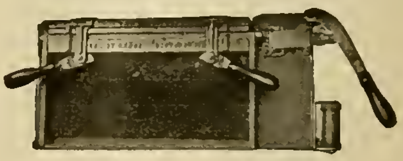
**LEAHY MFG. CO., 90 Sixth St., Higginsville, Mo.**
**or J. W. ROUSE, Mexico, Mo.**

# BARNES' Foot Power Machinery



Read what J. E. Rarent, of Chariton, N. Y., says: We cut with one of your Combined Machines last winter 60 chaff hives with 7-in. cap, 100 honey-racks, 600 frames and a great deal of other work. This winter we have a double amount of hives, etc., to make with this saw. It will do all you say of it." Catalog and price list free.

**W. F. & JOHN BARNES**
**995 Ruby St., ROCKFORD, ILLINOIS**



PAT. JULY 30, 1918

**C.O.BRUNO NAILING DEVICE**

*Made for the Huffman Brood Frames.* A combined Nailing, Wiring and Wedge Clamping Device. Has been tried and is guaranteed to do accurate work.

PRICE $7.50

Complete directions for operating are furnished with each device.

Manufactured by C. O. BRUNO
1413 South West Street, Rockford, Illinois

**Established 1885**

We are still furnishing beehives made of white pine; they will last. A. I. Root Co.'s make of bee supplies kept in stock. Send for catalog giving full particulars; free for the asking. Beeswax in exchange for supplies, or cash.

**JOHN NEBEL & SON SUPPLY CO.**
**High Hill, Montg. Co., Mo.**

# MONEYCOMB

## THE ALUMINUM HONEYCOMB

### THE WAY TO GREATER PRODUCTION

We are shipping "**MONEYCOMBS**" all over the civilized world, their success is tremendous.

The question is not, can you afford them, but how can you do without them? Make your bees be efficient.

Beeswax is the most costly product of the honeybee and since wax for comb building can only be produced at the expense of many times its weight in honey it is well that the ingenuity of man has invented one of the greatest aids to profitable beekeeping—the Aluminum Honeycomb.

With **MONEYCOMB** you can:

1. **Produce more honey**
2. **Extract cleaner, no breakage**
3. **Control all disease**
4. **Raise more brood**
5. **Save loss from melting and destruction by animals and insects**

"The Aluminum Comb 'MONEYCOMB' is here to stay; its assistance to beekeepers is invaluable.
"H. B. PARKS, State Apiary Inspector of Texas."

"My honeyflow was so light the bees would not draw out the foundation. I was compelled to use aluminum combs, 'MONEYCOMBS,' for brood rearing, and they proved an unqualified success.
"GEORGE D. SHAFER, Palo Alto, Calif."

"My experience with 'MONEYCOMBS,' the aluminum honeycomb, caused me to rank it with the centrifugal extractor.
"A. Z. ABUSHADY, editor of 'Bee World' and Secretary of Apis Club, Benson, Oxon, England."

"I have conducted exhaustive experiments with 'MONEYCOMB,' the aluminum honeycomb, and can heartily recommend it as the most satisfactory honeycomb I ever used in my long experience of bee raising. PROF. WILL C. STEINBRUNN,
"Principal of Los Gatos School of Apiculture, San Jose Street, Alameda, Calif."

Our Factory is now fully equipped and your order will be shipped immediately on receipt

Made in Langstroth or Hoffman sizes at 60c per frame, f. o. b., Pasadena. Write for prices on both shallow and Jumbo sizes. Discounts given on large orders.

Booklet "B 1" describing "**MONEYCOMBS**" mailed on request.

## ALUMINUM HONEYCOMB COMPANY

FACTORY AND OFFICE
**Chester and Colorado Streets, Pasadena, California**

## QUEENS AND PACKAGE BEES

We advise our prospective customers to place their orders as soon as they can determine what they will need and thus avoid being disappointed in getting queens or bees when desired.

By our improved methods of shopping, you will be assured of receiving queens and bees in first-class condition.

**Every Queen** is reared by me personally, and I assure you that all queens sent out will be the product of my very best efforts. If any should fail to measure up to what a good queen should be, she will be replaced at your request.

Health Certificate: "The State Inspector of Apiaries has this day examined the bees belonging to Jay Smith and found no evidence of any bee disease." Signed, Ross B. Scott, Deputy Inspector. Date, May 28, 1919.

OPINIONS OF OTHERS:

"Queens we got of you are the best we ever had, bar none."—Klabuhn Brothers, Conneaut, Ohio.

"The four 2-pound packages of bees I bought of you built up into rousing colonies and gave some surplus."—J. Strathdee, Winnipeg, Canada.

"My fifty colonies averaged one hundred pounds surplus. The queen I got of you made two hundred pounds."—Wm. Potter, Chandler, Indiana.

"If I were asked who has the best Italian queens I would say, 'Jay Smith.' In 1918 I had several colonies that produced three hundred pounds of extracted honey each. They were headed with queens that I raised from a queen I got from you in 1916."—F. R. Smythe, Amelia, Ohio.

"The strongest colony of bees I have seen this year was headed by a Jay Smith queen."—D. W. Erbaugh, Onward, Indiana, former State Inspector of Indiana.

**Price List**

| | |
|---|---|
| Select Untested Queens—May 15 to July 1— | |
| One to four, inclusive | $2.50 each |
| Five to nine, inclusive | 2.45 each |
| Ten or more | 2.40 each |
| July 1 to November 1— | |
| One to four, inclusive | 2.00 each |
| Five to nine, inclusive | 1.95 etch |
| Ten or more | 1.90 each |
| Bees by the pound—After May 15— | |
| One pound | $4.00 |
| Two pounds | 7.00 |

In lots of ten or more packages, 5 per cent discount.
Write for our booklet and complete price list.
Safe arrival, pure mating and entire satisfaction is our guarantee.

**JAY SMITH, Route 3, Vincennes, Ind.**

## HIVES, SMOKERS, FOUNDATION

### MR. BEEKEEPER

**HIVES**—You can't buy any better hives than these we manufacture. Genuine Root goods. You will need new hives this year to take care of your increase. You may need them soon.

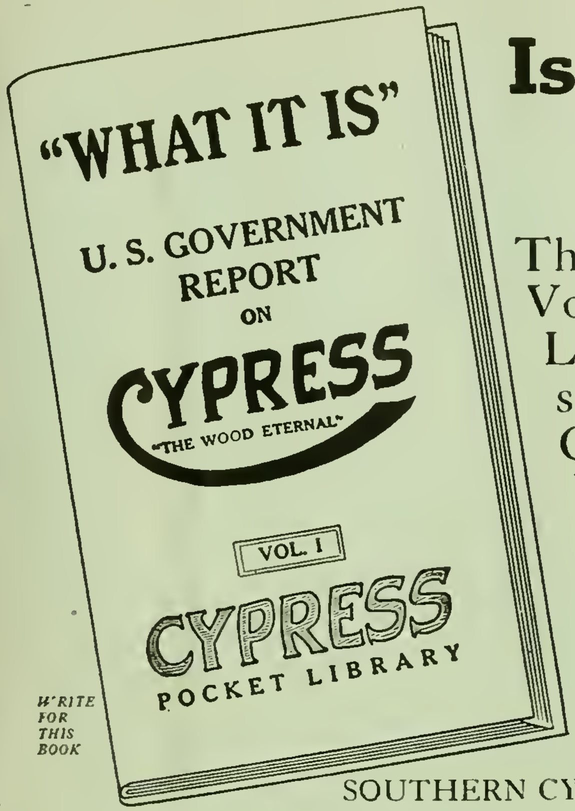
**SMOKERS**—You know the Root Company is the leader in the manufacture of Smokers. We admit there are no better smokers made than Root Smokers.

**FOUNDATION**—We have the Foundation. New process, but good old Root quality. You cannot start your season right without foundation. Spring is here and you must use some new foundation.

Get Busy, Send Your Order Now

*Everything considered it pays to buy the best.*
*So buy Root Goods*

THE A. I. ROOT CO. OF IOWA
COUNCIL BLUFFS, IOWA



**Is Uncle Sam's Word Good Enough?**

Then Mr. Bee-man, just write for Volume I of the Cypress Pocket Library and read what our respected Uncle has to say about Cypress ("The Wood Eternal.") You'll then see why any beehive, or bottom or winter case not made of Cypress is not so good as it might be. 42 other volumes all free. The list is in Volume I. Write and it comes.

SOUTHERN CYPRESS MANUFACTURERS' ASSOCIATION
1251 Hibernia Bank Building, New Orleans, La., or 1251 Heard National Bank Building, Jacksonville, Fla.

Insist on TRADE-MARKED Cypress at Your Local Lumber Dealer's — If he hasn't it, *LET US KNOW IMMEDIATELY*

---

**"GRIGGS SAVES YOU FREIGHT"**

**QUEENS—BEES**

We are booking orders now for our Select Stock of both Golden and Leather Colored Italian Bees and Queens. This stock has been bred with careful attention given to honey gathering qualities and gentleness.

Write us your wants and get our prices. Satisfaction guaranteed.

**SUPPLIES**

We know you are not the fellow who waits until the last minute before ordering his supplies.

We have a large stock of new goods to rush to you the minute your order arrives.

Send us a list of goods wanted at once and receive prices, with early order discounts.

These 60-lb. cans will soon be gone; better hurry your order in at once. Two men took a car load.

**WHITE CLOVER HONEY**

Can use a limited amount of white clover honey, if price is in line.

**BEESWAX**

We are in the market for large quantities of Beeswax. Write us as to what you have to offer, and prices asked. We pay top market prices, having a good outlet for select wax, nice and clean. We pay spot cash, or will exchange for supplies.

FREE Catalog of Bee SUPPLIES for the asking.

**GRIGGS BROS. CO., TOLEDO, OHIO** DEPT. 24

**"GRIGGS SAVES YOU FREIGHT"**

# We Will Treat You Equally Well

*Mohawk, N. Y., Dec. 30, 1919*

*The A. I. Root Co.,*
*Medina, Ohio.*

*Gentlemen:*

*I have dealt with the Roots for 23 years, and know that honesty and prompt answers are what have made the Root Company what it is today, with good supplies for proof of value received.*

*One time I sent an order by a neighbor, and he sent 3c over, but the thought of 3c was too much for the A. I. R. Co. to pocket; so they used 2c and an envelope and a slip with the statement to return the 3c. Hats off to the A. I. R. Co.*

]*Signed*] *R. C. Morts.*

**THE A. I. ROOT CO., MEDINA, OHIO**

# AMERICAN BEE JOURNAL

MAY, 1920

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TWO ATTRACTIVE SOUTHERN APIARIES. UPPER, NEWELL'S APIARY UNDER MOSS-HUNG TREES IN BRAZOS RIVER BOTTOMS. LOWER, WALKER'S QUEEN YARD IN SUNNY TENNESSEE.

# Order Your Bee Supplies Now

NOW is the time to check up on your hives and accessories to make sure that everything is complete and in perfect condition for the coming season. Our complete line of Bee Supplies includes everything needed by the modern Beekeepers. Besides our own exclusive articles we are distributors for the famous Lewis Beeware line, and dealers in Root's Extractors and Smokers, and Dadant's Foundations. Orders placed now can be filled promptly. Prices on many articles are sure to advance within the next few months. Send for our large 1920 Catalog today.

## *Beeswax Rendered from Old Combs*

WE pay you the highest market price for rendered wax, less 5 cents per pound rendering charge. Our special hydraulic steam wax press gets the very last drop of wax from old combs and cappings assuring you maximum profit on them. Write for full particulars.

## *Best Prices Paid for Honey*

Tin Rabbets
Hives, all sorts
Extractors

Foundations, Dadant's
Root's Smokers
Excluders, all makes
Division Board

Wax Extractors

Metal Spaces
Uncapping Knives
Tin Tacks
Honey Boards

Covers for hives
Observation Hives

SEND us samples of your honey and we will quote you a price equal or better than that of any other concern. We buy and sell both comb and extracted honey. Cash remitted in full the same day shipment is received.

### Send for Our Large New 1920 Catalog

THIS new catalog contains over 40 pages of every variety of Beekeeper's Supplies, including all the latest and most improved devices. It is really a valuable reference book on beekeeping accessories.

**THE FRED W. MUTH CO.**
*"THE BUSY BEE MEN"*
**CINCINNATI, O**

**ITALIAN QUEENS**

The Old Reliable Three-Banded Italians. The best allround bee to be had. Queens ready to mail April 1. Will book orders now. Will guarantee safe arrival in United States and Canada. Prices for April and May:

Untested,, $1.50; 6, $8; 12, $15
Tested, $2.25; 6, $12; 12, $22.
Select tested. $3 each.

Descriptive circular and price list free.

**JOHN G. MILLER,**
723 C Street, Corpus Christi, Texas.

**QUINN'S QUEENS OF QUALITY**

Have no superiors—"There's a reason." Are Mendelian bred, good qualities accentuated. Gray Carniolans, Gray Caucasians, most gentle of all, prolific, hardy, vigorous, disease-resistant, white comb builders—they deliver the goods.

ITALIANS, 3-banded, line bred, pedigreed; need no boosting; they speak for themselves.

**CHAS. W. QUINN, Sabot, Va.**

**Honey Making—Money Making Italian Queens**

Untested ......$1.50; 25 or more $1.35
Tested ........$2.50; 25 or more, $2.25
Select tested, each $3.

Circular free. All letters answered promptly and cheerfully.

**R. V. STEARNS, Brady, Texas.**

**FOR SALE**

200 two-frame nuclei ready for delivery from May 1 to 20. $5.50 each with young untested queen. Where tested queens are wanted $6.50 each

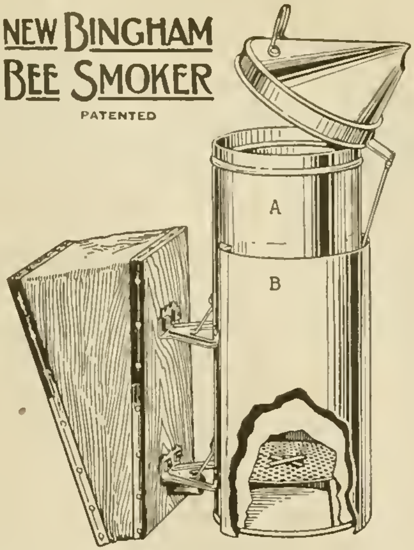
**COTTON BELT APIARIES**
**ROXTON, TEXAS**

**BEE SUPPLIES**

We carry a complete stock of supplies at all times, and can make prompt shipments. Our prices will interest you.

**Send Us Your Inquiries**
**A. H. RUSCH & SON CO.**
**Reedsville, Wis.**

**NEW BINGHAM BEE SMOKER**
PATENTED

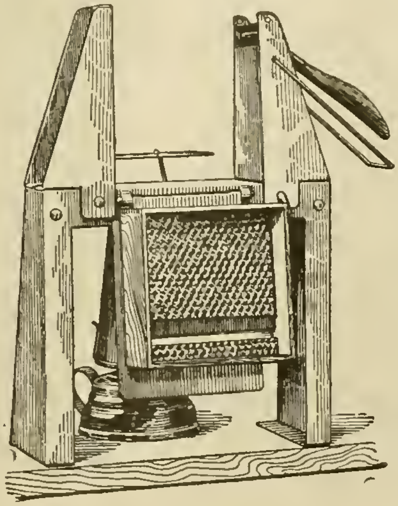


The Bingham Bee Smoker has been on the market over forty years and is the standard in this and many foreign countries. It is the all important tool of the most extensive honey producers in the world. It is now made in five sizes.

| Postage extra. | Size of stove | Shipping weight. | Price. |
|---|---|---|---|
| Big Smoke, with shield | 4x10 inch | 3 pounds | $2.50 |
| Big Smoke, no shield | 4x10 inch | 3 pounds | 2.00 |
| Smoke Engine | 4x 7 inch | 2¼ pounds | 1.50 |
| Doctor | 3½x7 inch | 2 pounds | 1.15 |
| Conqueror | 3x 7 inch | 1¾ pounds | 1.00 |
| Little Wonder | 3x5½ inch | 1½ pounds | .80 |

Smoke Engine or Doctor in copper, $1 extra.

The Big Smoke has just been produced in response to a demand for a larger size smoker, one that will hold more fuel, require filling less often, from extensive bee handlers. The shield designated by the letter "B" in the cut above, is designed as a matter of protection from the hot fire pot. Many hold the smoker by the bellows, between the knees, when at work, and the shield will prevent burning of the trousers or one's legs.



The Woodman Section Fixer, a combined section press and foundation fastener, of pressed steel construction, forms comb-honey sections and puts in top and bottom foundation starters, all at one handling. It is the finest equipment for this work on the market.

**TIN HONEY PACKAGES**

2½ lb., Friction Top cans, cases of 24
2½ lb., Friction Top cans, crates of 100
2½ lb., Friction Top cans, crates of 450
5 lb., Friction Top pails, crates of 12
5 lb., Friction Top pails, crates of 100
5 lb., Friction Top pails, crates of 200
10 lb., Friction Top pails, cases of 6
10 lb., Friction Top pails, crates of 100
60 lb., case, in cases of 1 and 2
60 lb., cans in crates of 24 and 50

We save you money on cans. Ask for special quotations. Shipments from Michigan, Ohio, Illinois and Maryland factories.

**A. G. WOODMAN CO.**
**GRAND RAPIDS, MICH., U. S. A.**

"GRIGGS SAVES YOU FREIGHT"

# TOLEDO

May is here, and the good, familiar song of the honey bees in the fruit bloom with it. Just one more month, and the great honey harvest will be upon us; but the question is, will you be prepared? Don't lose the best of the crop because you were among the number that waited to get your supplies. Order them early, and from Toledo, as you are on a direct line, and shipments go forward promptly, and at factory prices.

**LIVE BEES IN 3-LB. PACKAGES, WITH QUEEN**

If you have lost your bees the past winter, let us send you some 3-lb. packages next month to replace them and save those good combs from the moth worm. Bear in mind one package will pay for 3 and the 3-lb. package is the most profitable to buy. Only a limited number contracted for, so order today.

**NEW AND SECOND-HAND HONEY CANS**

We have a good stock of both new and first-class 60-lb honey cans, but the second-hand cans will soon be gone. Remember our seconds have only been used once, and are nice and clean and bright inside, and in good cases. They are as good as new, and for half the price.

**BEESWAX BEESWAX**

We have a large demand for good, first-class beeswax, and will pay highest market price for all grades, but for fancy yellow wax we will give from 2 to 3 cents above the market price. Let us hear from you as to what you have to offer.

**FREE CATALOG AND SPECIAL BEE PRICE LIST**

for the asking. Don't delay, but order today.

**GRIGGS BROS. CO., TOLEDO, OHIO** DEPT. 24

"GRIGGS SAVES YOU FREIGHT"

**QUEENS** **PACKAGE BEES** **QUEENS**

Did you read Prof. H. F. Wilson's write-up in Gleanings, March issue, in regard to the packages of bees and queens he received from me last year? Notice he said some of those packages of bees and queens received in May gathered 150 pounds of honey. That speaks for itself in regard to the quality of my **Queens.** The 2-pound packages of bees and queens I shipped Mr. David Running in 1917 gathered 140 pounds of honey (He was then President of the National Beekeepers' Association). Have booked all the orders I can guarantee shipping on time for April, but send for **Free Circular** for later shipping, which states our guarantee; also gives prices on bees by parcel post, nuclei, etc., 3-banded and Golden queens. Have secured the best queen men obtainable, and we are prepared to turn out 6,000 **Queens** per month. They do nothing but take pains in rearing the best of queens. Careful inspection before shipping. Have an entirely separate crew for shipping bees, etc.; 20 years a beekeeper.

| Prices F. O. B. Here by Express | Queens |
|---|---|
| 1-lb. pkg. bees $2.40, 25 or more $2.16 | Untested $1.50 each, 25 or more $1.35 |
| 2-lb. pkg. bees $4.25, 25 or more $3.83 | Select untested, $1.65 each; 25 or more, $1.50. |
| 3-lb. pkg. bees $6.25, 25 or more $5.62 | Tested $2.50 each, 25 or more $2.25 |
| Add price of queen when ordering bees. | Select tested $3.00 each |

**NUECES COUNTY APIARIES,** E. B. AULT, Prop. **CALALLEN, TEXAS**

# Superior Foundation assures Superior Quality

HUNDREDS PRONOUNCE IT "BEST BY TEST"

**OUTPUT DOUBLED**

The enormous demand for SUPERIOR FOUNDATION has required the doubling of our manufacturing facilities. We have doubled our Ogden factory in size for 1920, and have also added sufficient new machinery to double our output of foundation. We now occupy over 20,000 square feet of floor space with our enlarged factory of three floors, and invite you to visit us whenever in Ogden.

THERE'S A REASON for this rapid growth. Acquaint yourself with the superiority of our produce. Every pound we manufacture is backed by our reputation for highest quality and square dealing.

BEESWAX ARRIVALS during the past thirty days have been very liberal, but we still require additional quantities at highest market price.

OUR BEE SUPPLY DEPARTMENT is humming. We can fill your order for "Everything in Bee Supplies." Prices on request.

**SUPERIOR HONEY CO., Ogden, Utah**

**(Manufacturers of Weed Process Foundation)**

# THE FIRST COMB FOUNDATION

Bee Comb Foundation is a comparatively recent product. Previous to 1850 very few beekeepers realized the value of elimination of drone-comb. Some few did. These got straight worker combs by cutting up the crooked combs and including only worker comb in the frames. The elder member of the present Dadant firm well remembers this procedure practiced together with his father, Charles Dadant.

Not only did they remodel the combs of their own colonies, but bought dead colonies everywhere possible to increase the amount of worker comb available. And yet they were always short of worker comb.

JOHANNES MEHRING

It was in Europe that the first attempt at foundation was made. Johannes Mehring in 1857 produced crude plates of wax with the hexagonal impression. But these were far from perfect. In fact, much drone-comb was built from them. But it was a beginning.

The waffle iron presses of Rietsche & Given followed. The sheets became of better impression, but were still hard to ship owing to their brittleness.

The roller mills of American make were later to remedy this defect, gradually improving with continued experiment.

**DADANT'S FOUNDATIONS** (*Every inch, every pound, every ton, equal to any sample we have ever sent out*)

SPECIFY IT TO YOUR DEALER. IF HE HASN'T IT WRITE US

**DADANT & SONS, Hamilton, Illinois**

CATALOG AND PRICES ON BEE SUPPLIES, BEESWAX, WAX WORKING INTO COMB FOUNDATION AND COMB RENDERING FOR THE ASKING

# "SAG-PROOF" FRAMES

Stop losing dollars from sagged brood combs!
Use frames wired to support combs properly!
Follow the lead of America's best beekeepers!
Use Lewis "Sag-Proof" frames in your hives!

## HOW THEY ARE MADE

Expensive machinery installed in the Lewis "Beeware" factory pierces Hoffman end bars so the wiring holes come nearer the topbar and give support where it is most needed—at the top.

Principles involved in this improvement have been approved from actual samples sent to and used by such leaders as Frank Rauchfuss, G. S. Demuth, J. E. Crane, A. G. Woodman, E. G. LeStourgeon, N. E. France, Ben Davis, H. D. Murry, E. S. Miller, F. B. Paddock, H. F. Wilson, G. H. Rea, E. G. Baldwin and Dadants.

Dr. C. C. Miller, after examining samples sent to him, wrote: "The new wiring, as compared with the old wiring with the upper wires farther apart, ought to be worth many dollars to the business of honey production."

Get in line and use Lewis "Beeware" now. "Sag-Proof" frames are just one instance of our interest in your beekeeping success. Your catalog gives your distributor's name.

**LOOK FOR**

BEWARE
WHERE YOU BUY YOUR
BEEWARE
WATERTOWN WIS U.S.A.
MAKES THE FINEST

**THIS MARK**

**BRANCHES AND DISTRIBUTORS EVERYWHERE**

## G. B. LEWIS COMPANY, WATERTOWN, WISCONSIN

**MAKERS OF BEEWARE**

WRITE FOR BOOKLET "HOW TO MANAGE BEES IN SPRING"—PRICE 5 CENTS

AMERICAN
BEE JOURNAL

VOL. LX—NO. 5 HAMILTON, ILL., MAY, 1920 MONTHLY, $1.00 A YEAR

# THE EVOLUTION OF BEEKEEPING PRACTICE

BY G. S. DEMUTH

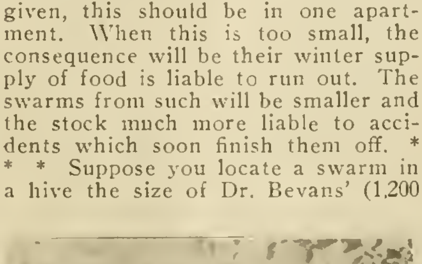
THERE are certain well-defined eras through which beekeeping has passed in its development. The changes in beekeeping practice are reflected in the development of the beehive. In order to understand fully the reason for the present-day construction of the standard hive and its adaptation to modern beekeeping practice, it is necessary to trace the changes that have been made in hive construction and search for the reasons for each of them. It is my purpose in this discussion to point out briefly the different eras in the development of beekeeping in this country, and at the same time trace the more important changes in the development of the beehive.

### The Box Hive Era Previous to 1853

Previous to the Langstroth invention was the box-hive era, or the ancient history in beekeeping practice. During this era, honey for human use was secured by "taking up" or brimstoning in the fall the heaviest colonies, and during the latter part of the era by using a small box or "cap" placed on top of the hive over an auger hole through which the bees could pass into the box. Beekeeping was quite general, but the number of colonies for each beekeeper was relatively small. The honey produced was largely for home use, though during the latter part of the era considerable quantities of honey began to find its way into the markets.

The most remarkable feature of the box-hive era is the fact that it produced the great leader and teacher, Moses Quinby, whose book, "Mysteries of Beekeeping Explained," is a classic in American beekeeping literature. In the first edition of this book Quinby described in detail the construction of the Quinby box hive and the system of management which he had evolved for its use.

The size of this box-hive had been carefully worked out and it is interesting to note the reasons given by Quinby for a brood-chamber of 2,000 cubic inches, which he used and recommended. In this connection he wrote: "We must remember that the queen needs room for all her eggs, and the bees need space to store their winter provisions; for reasons before given, this should be in one apartment. When this is too small, the consequence will be their winter supply of food is liable to run out. The swarms from such will be smaller and the stock much more liable to accidents which soon finish them off. * * * Suppose you locate a swarm in a hive the size of Dr. Bevans' (1,200 cubic inches), the bees would occupy nearly all of this room with brood-combs; now, if you put on boxes and as soon as filled put on empty ones, the amount of surplus honey would be great; very satisfactory for the first summer, but in a year or two your little hive is gone. * * * If too large * * * they last a long time and are but little profit in surplus honey and swarms."—(Moses Quinby, 1853, "Mysteries of Beekeeping Explained," pp. 42-43).



Box hive with shallow cap, the first step in the development of our present system of taking surplus honey.

### The Box-Honey Era, 1853-1867

The Langstroth frame and hive was patented under date October 5, 1852. "Langstroth on the Hive and Honeybee" was published early in the summer of 1853, thus appearing simultaneously with Quinby's work, "Mysteries of Beekeeping Explained." Up to this time neither of these great leaders knew of the work done by the other. The invention of the movable frame by Langstroth marked the beginning of modern beekeeping and ushered in the box-honey era. During this period surplus honey was produced in boxes, each holding 5 to 10 pounds of honey, which was built in the boxes by the bees. These boxes were usually made with glass on one or more sides to show the honey advantageously when it was offered for sale in the markets. It was a development from the old cap of earlier days. There is evidence in the early literature indicating that Langstroth, after much careful experimenting, chose the particular depth of his hive because this depth of the brood-chamber caused the bees to enter these empty boxes and fill them with honey more readily than a deeper brood-chamber.

The extra shallowness of the Langstroth brood-chamber in comparison with the familiar tall box-hive or gum, brought a storm of protest from beekeepers, many of whom following the lead of Quinby, adopted the Langstroth principle of the movable combs, but used a deeper frame to conform more nearly to the then prevalent idea as to the proper shape for a beehive. Quinby's first modification of the Langstroth hive was 12 x12½x19½ in., inside measure, and contained eight frames, each 18½ in. long and 11¼ in. deep. This gives a cubic capacity within the frames slightly greater than the Quinby box-hive. The American frame was originally 12½ in. wide and 16 in. or more deep, thus making a hive more nearly the shape of the conventional box-hives, but was afterwards changed to 12x12 in. The Gallup frame was 11¼x 11¼ in., thus fitting the Quinby hive when the frames are placed crosswise in the brood-chamber. The Adair frame was 13¾x11¼ in., thus using the Quinby depth, the length being such that it would fit a Langstroth hive if placed crosswise in the brood-chamber.

These deeper frames were not well adapted to box-honey production when the Langstroth principle of top storing was used; therefore, some who favored the deep frames arranged their hives for side storing, placing the boxes within the same apartment with the brood-combs and arranged on each side of the brood. This, however, did not prove entirely satisfactory and the Langstroth frame and hive in connection with top storing was championed by many producers of box-honey.

### The First Extracted Honey Era, 1867 to 1876

The honey extractor was invented in 1865, but was first heard of in this country in 1867. Many crude home-made machines were built by beekeepers at once, and the use of the honey extractor was taken up with great enthusiasm. In their zeal in the use of this new implement beekeepers extracted at frequent intervals during the honey flow, taking all the honey from the brood-chamber as well as from the combs in an upper story. The difficulty of removing the brood-combs for extracting, when a two-story hive was used, and when the extracting process was repeated every few days, suggested at once the advantage of having all the frames in a single hive-body; thus making all the combs readily accessible when the cover is removed. This gave the advocates of the deeper frame their opportunity, since in extracted honey production it was no longer necessary to use a shallow brood-chamber, as in box-honey production. Even Langstroth seriously considered changing his frame to a deeper one.

On this subject he wrote, in a letter to A. I. Root, on April 4, 1872, as follows: "Dear Friend: I hope you will try the 12x12 in., but I have many years ago tried such frames and do not like them—too much cost to make and handle, etc. I think the hive 14x 14x13 in. deep much better and shall probably adopt that shape, as the honey emptier '(note honey Extractor)' and side boxes make it no longer so desirable to have a shallow hive." The next day, April 5, he wrote: "You will see from my last that I propose to change the dimensions of my frame. Perhaps there will not be much choice between the hive 14x14x13 in. and 12x12x12 in., but I prefer ten frames to twelve."—Gleanings in Bee Culture, Vol. 2, p. 58).

At this time Adair began strenuously to advocate a hive which he called the New Era Hive, and which later was known as the Long Idea Hive. This hive was arranged for the brood-combs and extracting-combs in the same apartment, and in some cases frames were added until the hive was 4 feet long. Two years later A. I. Root, who previous to this time had been a consistent advocate of the Langstroth frame, proposed a standard hive built on the long idea principle to hold 20 Adair frames. This was known as the Standard. The long controversy on the hive question was now thought to have been finished and the question finally settled for all time. Furthermore, the use of such a hive in connection with frequent and close extracting practically solved the swarming problem. However, the standardization of the beehive and beekeeping practice was not to be accomplished so soon, for another great invention appeared on the beekeeping horizon, ushering in a new era in beekeeping, upsetting the established system of management and changing the destiny of hive construction. I refer to the invention of comb-foundation and the ushering in of the comb-honey era.

Apiary of box hives. The way all bees were kept in the old days.

### Comb-Honey Era, 1876 to 1906

Impressed sheets of beeswax, making a crude foundation without side walls had been used in Europe since 1857. In this country Samuel Wagner, founder of the American Bee Journal, experimented in making embossed sheets of beeswax and in 1861 secured a patent on such embossed sheets. After some delays incident to the Civil War and the reconstruction period, he entirely abandoned the project. Several attempts were made to build machines to stamp the wax sheets by various persons, and finally, in 1874 and 1875, samples of foundation which proved to be readily acceptable by the bees, were sent out to beekeepers by "John Long."

In 1875 A. I. Root, with characteristic enthusiasm and energy, began his experiments in making foundation. At first he built up plates to emboss the wax sheets, making the plates by assembling "type" which he moulded, each type having the upper face modeled after the base of the cell. These types were soldered together in such a manner that they formed a solid plate, two of which were used to impress the wax sheets. He also, during the same winter, worked on a roll machine, the first of which was finished at Medina, Ohio, on February 26, 1876. During that year 100 pounds of comb-foundation were sent out from Medina to beekeepers throughout the country for experimental purposes.

The enthusiasm with which this new product was received and tried out gave a new impetus to comb-honey production. Instead of several combs in a box, as in the box-honey era, comb honey was at this time produced in single comb boxes and sheets of comb-foundation were used to guide the work of the bees. In regard to the effect of the invention of comb-foundation upon the construction of the beehive, A. I. Root wrote as follows: "Our friend Dean said a few days ago that if he were going to raise comb honey he would unhesitatingly adopt the shallow Langstroth frame, although he has been one of the strongest advocates of the Gallup frame. Just what effect the artificial bleached wax-comb is going to have on the shape of the hives, we are unable to tell, but there can be little doubt that it will turn many others, like friend Dean, toward the Langstroth frame and two-story hive."—(Gleanings in Bee Culture, Vol 4, p. 26). During the year 1876 neat sections, made of four pieces, but otherwise similar to the comb-honey sections of today, were evolved from their crude prototype, the single comb boxes or frames which had been used by some beekeepers previous to the introduction of comb-foundation.

Comb-honey production now became so attractive that within a few years beekeepers talked and wrote chiefly in terms of comb honey. The exacting requirements of successful comb-honey production made it necessary for beekeepers to study their problems as never before. This is reflected in the beekeeping literature of the time giving it a brilliancy peculiar to the comb-honey era. Such leaders as Doolittle, Hutchinson, Heddon, Taylor, and our own Dr. Miller, together with many others, were the product of the earlier struggles with the multitude of baffling problems connected with comb-honey production. In turn they have left an everlasting impress upon the industry through the literature of the time.

Early in the comb-honey era there was a rapid ascendency of the Langstroth frame and the abandonment of the deeper frames by most comb-honey producers. This was followed by another change in the hive—the reduction in the size of the brood-chamber. Doolittle, one of the few comb-honey producers who retained the deep frame, reduced the standard Gallup hive from twelve frames to nine frames. Heddon and others reduced the Langstroth brood-chamber from ten frames to eight frames. The literature indicates clearly that these changes were made because of the peculiar requirements in comb-honey production, that the brood-chamber be filled with brood at the beginning of the honey flow and a sharp dividing line maintained between the brood and supers during the honey flow.

The change to comb-honey production had brought back the swarming problem, the solution of which had its effect in a further reduction of the brood-nest when hiving swarms. In the clover region swarming usually occurs during the honey-flow, which formerly meant a loss of the crop of honey during ordinary years from all colonies that swarmed. In order to prevent this, beekeepers learned to hive the swarm in a new hive on the old location, leaving the parent colony close beside the swarm until about the seventh day, when it is moved away. This drains the parent colony of its field bees, adding them to the swarm, and at the same time so reduces the colony that after-swarms are prevented. The supers were transferred from the parent colony to the swarm at the time of hiving. In order to compel the bees to put practically all the honey into the supers, the brood-chamber was contracted by means of heavy division boards.

Doolittle described this method of securing large crops from swarming colonies in February, 1885, as follows: "I use six Gallup frames of comb (equal to five Langstroth frames) for the very largest swarms, while others have four or five, according to the size of the swarm to be hived, and in this way I always secure good results."—(Gleanings in Bee Culture, Vol. 13, p. 94).

In July, 1885, Mr. Heddon published an article in the American Bee Journal on "The Contraction Method," in which he advocated that the colonies be maintained on five combs throughout the year, except during the six weeks just preceding the honey flow, when they were given three extra combs to induce the rearing of more bees for the honey flow. In this connection he wrote: "I have had colonies, after casting three swarms, at work in the supers within five days after contracting. I think that the advantages of this contracting system will be seen; or it may be called an enlarging system; that is, enlarging the brood-chamber for about six weeks during the time that the queen is not only the most prolific, but when such prolificness gives us bees to become field workers, just when we most need them."—(American Bee Journal, Vol. 21, p. 437).

The proper capacity of the brood-chamber was thought by many beekeepers at this time to be five Langstroth frames, except during the short period mentioned when the brood-chamber of the strongest colonies was expanded to eight frames. The contraction system came to be used not only when hiving swarms, but was used on established colonies as well. Contraction of the brood-chamber, the use of the queen-excluding honey-boards, and reversing or inverting the brood-combs to cause the bees to take practically all the honey to the supers, became quite the fashion for several years among the leaders at this time. Even Dr. Miller wrote: "Up to the time of putting on supers, the desire has been to have the bees occupy as many combs as possible. I have had as many as nine frames occupied with brood, without my spreading the brood, or doing anything to urge the bees or queen further than to see they had abundant stores. When it comes time to put on supers they are reduced to four or five frames."—(C. C. Miller, 1885, "A Year Among the Bees," p. 419).

(To be Continued)

## Specific Gravity of Honey

By F. Dundas Todd

THE Beekeepers' Association of British Columbia for several years has arranged with Mr. J. A. Dawson, head of the Dominion Department of Trade and Commerce, Vancouver, to test the density of all honies entered for competition at the Vancouver Agricultural Exhibition, the tests being made by means of an Abbe refractometer. At the last exhibition he remarked that a sample of honey shown by Mr. L. Harris, Vernon, one of our bee inspectors, with a refractive index of 1.5008, indicating that it contained 84.62 per cent of solids, and had a specific gravity of 1.443, was the densest honey he had ever tested. Here are a few others of his readings on that occasion, just to show the variations in density. They were not chosen at the time to show high density, but for quite another purpose, so I quote them as they are, the only readings I happen to have:

| Sp. Gravity. | Solids. |
|---|---|
| 1.443 | 84.62 |
| 1.4400 | 84.39 |
| 1.4333 | 83.23 |
| 1.4305 | 82.81 |
| 1.4281 | 82.46 |
| 1.4189 | 81.08 |

The Dominion standard for honey is

| | |
|---|---|
| 1.3790 | 75. |

My own honey, which is principally from wild fruit blossoms and is sealed for at least a month before being extracted, shows about 81 per cent solids; that is a specific gravity of 1.418.

I notice in the issue for May of the American Bee Journal that Mr. Isaac Hopkins gives 1.420 as the minimum specific gravity officially accepted by the New Zealand Government graders, and states that no honey of lower specific gravity is allowed to be exported, or accepted by the Co-operative Honey Producers' Association. Our experience at Vancouver would indicate that this is a very high standard, and I wonder whether a reading by Mr. Dawson of one of New Zealand's minimum standard samples would be as high.

A rather interesting and practical feature developed this past season. The three older of British Columbia's half dozen bee inspectors were acting as judges, and the idea struck them to check up the "capsizing" way of testing comparative densities with Mr. Dawson's figures, just to see how it would work out. In the capsizing method one takes a jar of honey in each hand, then turns them upside down at the same instant, and watches the air cells rising. The quicker the cell arises, the thinner the honey. I am glad to report that when the honey is free of any granulation the method is reliable as a comparative test, and enables the judges to quickly arrange the honeys in order of density. I have also learned that not infrequently there is quite a variation in the flavor, density and color of honey in the same exhibit. This does not surprise me, because when I extract in August I know I have quite a percentage of honey that was sealed early in May, so a dozen jars filled from one run of the extractor are found to be streaky.

Victoria, B. C.

### Minnesota Report

The fifth annual report of Charles D. Blaker, State Inspector of Apiaries of Minnesota, is ready for distribution. Minesota beekeepers desiring this report should address Mr. Blaker at Minneapolis.

AMERICAN BEE JOURNAL
Established by Samuel Wagner in 1861

The oldest Bee Journal in the English language.
**Published monthly at Hamilton, Illinois.**

Entered as second-class matter at the postoffice at Hamilton, Illinois.

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MAURICE G. DADANT ........Business Manager

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# THE EDITOR'S VIEWPOINT

### Good Samaritan and Other Funds

As stated in the April number, the total amount sent to France, the past month, representing all subscriptions to that date, was 10,073.37 francs. This includes the following subscriptions received at Buffalo:

| | |
|---|---|
| Miss Favard, Chicago | $ 5.00 |
| E. G. LeStourgeon, San Antonio, Texas | 5.00 |
| A. J. Odell | 1.00 |
| C. F. Muth, Cincinnati | 5.00 |
| Griggs Bros., Toledo, O. | 5.00 |
| B. F. Neach | 2.00 |
| L. K. Edgett | 2.00 |
| R. C. Whitman | 50 |
| A friend | 5.00 |
| F. W. L. Sladen, Ottawa | 2.00 |
| F. B. Paddock, Ames, Ia. | 5.00 |
| J. J. Anderson, Idaho | 1.00 |
| W. L. Coggshall, Groton, N. Y. | 2.00 |
| E. W. Gutekunst | 2.00 |
| B. F. Kindig, East Lansing | 1.00 |
| A friend | 1.00 |
| Riverside Co., Beekeepers, Calif. | 52.00 |
| Total | $96.50 |

Funds are still coming, so we begin a new list as follows:

| | |
|---|---|
| L. C. Rousseau, Waxahachie, Tex. | $1.00 |
| L. K. Hostetter, Lancaster, Pa. | 5.00 |
| O. W. Bedell, Earlville, N. Y. | 5.00 |
| Emma L. Compton, Randolph, Mo. | 5.00 |
| G. A. Bahn, Austin, Texas | 5.00 |
| J. C. McCubbin, Fresno, Cal | 10.00 |
| F. Kittinger, Franksville, Tenn. | 5.00 |
| Jacques Verret, Charlesbourg, Quebec | 2.00 |
| Roy Tait, Siskiyou, Cal. | 1.00 |
| A. Norton, Monterey, Cal. | 2.50 |
| Leon L. Jaquemin, Solidad, Cal. | 2.00 |
| G. B. DeSellem, Los Angeles, Cal. | 1.00 |
| A. Stevenson, Los Angeles, Cal. | .50 |
| Ferd Hanson, Los Angeles, Cal. | 1.00 |
| S. S. Knabenshue, Los Angeles, Cal. | .50 |
| Total to April 12 | $46.50 |

The last 7 names came through J. E. Pleasants.

### Austrian Food Orders

The Society of Friends have discontinued their Paris agency, so the funds have been put into the hands of Messrs. Crepieux-Jamin, Tombu and Outhelin, the local Franco-Belgian committee. They are to send instructions as to the delivery of the goods.

The "food orders" sent to the starving editors at Vienna were subscribed as follows:

| | |
|---|---|
| A friend, of Canada | $5.00 |
| E. G. LeStourgeon | 5.00 |
| S. D. House | 5.00 |
| C. F. Muth | 5.00 |
| R. C. Whitman | .50 |
| F. Rauchfuss | 1.00 |
| E. W. Gutekunst | 2.00 |
| B. F. Kindig | 1.00 |
| C. J. Baldridge | 2.00 |
| A friend, Michigan | 1.00 |
| F. C. Pellett | 3.00 |
| O. W. Bedell | 2.50 |
| C. P. Dadant | 7.00 |

Total: Four food orders sent $40.00

### Queens and Queen-Breeders

The American Bee Journal is already receiving some complaints concerning queen-breeders. Not that they have failed to fill the orders, for it is yet too early, but that they are not answering as promptly as expected. Many buyers fear that there will be trouble, as there was last year, in securing queens.

In our August number we gave a lecture to both buyers and sellers. Another lecture may be needed.

The man who breeds queens for sale must be a reliable man. He must be prompt in acknowledging receipt of money and either give a direct promise of delivery of such queens as the customer wants, or state his reasons for not making promises. If he cannot make sure of filling the order, he should keep that money where he can promptly return it in case of failure. He must put himself in his customer's place and realize that it is a great disappointment to pay one's money for goods and fail to get them, or get them too late.

On the other hand, as I have myself bred queens for sale in the long ago, I have much sympathy for the man who is making honest efforts to supply queens when the season is backward. The man in the North, in Iowa, for instance, who sees a heavy snow fall when he thought winter was over, and who reads of frosts in Dixie at a time when frosts are no longer expected there, must certainly comprehend that the queen-breeder is as much disappointed as he may be himself; that if he has promised queens for May 1, he may be unable to have them, no matter how strenuously he tries.

Meanwhile we demand of those who advertise in our columns that they furnish good queens, at the dates agreed, or return the funds received. But we hope the buyers will be lenient when unexpected irregularities of the weather, delay the shipments unexpectedly. As we said last year, queens are not kept in a bushel box, ready for delivery by return mail. Let us give and take. The golden rule is, as elsewhere, applicable to both sides. But dishonest breeders should be at once eliminated.

Mrs. Baldensperger preparing to hive a swarm.

### Disulphide or Bisulphide and Moth Eggs

In the March number, page 90, following Mr. Pangburn's letter on carbon disulphide and the killing of the eggs of the moth, we asked for more information. We received it. In fact we received too much of it, on both sides of the question. So we concluded to refer the matter to Dr. Paddock, whose experiments on this subject were published in Bulletin 231 of the Texas Experiment Station. It will be remembered that, in all his experiments, the eggs of the moth were uninjured by the fumes. We now publish a part of his reply and will close the subject:

"My experience with the moths was in the South, where conditions are very different from those existing in this section. In Bulletin No. 231 of the Texas Experiment Station, you will note that on 3 different occasions the eggs of the moths hatched after fumigation. We kept no records of variations of temperature and humidity. The killing power of carbon bisulphide is much reduced in low temperatures.

"The dose of one ounce to the cubic foot, used in the experiment, is an excessive dose of bisulphide. An exposition to this charge for 24 hours is also a maximum exposure.

"I have no doubt but that under ideal conditions and the use of an excessive dose of carbon bisulphide the eggs of the bee both can be destroyed. In the experiment which we conducted we attempted to keep the work on a practical basis, therefore, it seemed more feasible for us to fumigate two times with the dose sufficient to kill the unprotected larvæ, rather than to use an excessive dose for the eggs. We are fully familiar with the exceptional cases, but I believe it is better to make recommendations on the basis of the ordinary fumigation than the exception. The temperature factor is of utmost consideration in this territory; for instance, if the fumigation was given during the winter, the carbon bisulphide would not be very effective. Under low conditions if the eggs have a retarded hatching they might hatch in the spring. The beekeepers might consider this a matter of infestation.

"I believe that it would be unwise to make any conclusive statement."

F. B. PADDOCK.

### European Foulbrood

At the National meeting at Buffalo, Dr. Phillips gave a very interesting address upon the general tendency of European foulbrood to extend itself and perpetuate in some spots, while it readily disappears in other spots.

From his explanations, accompanied with maps, it appears that the disease is persistent in countries where there is a long spell of spring or early summer weather without honey flow. So in the buckwheat district of New York, where the flow comes in August, the disease is more permanent. Good food evidently would tend to lessen the virulence of the disease. Similarly, the places where much moisture is found, with numerous fall flowers, such as the Kankakee swamps in northeastern Illinois and northwestern Indiana, the Mississippi low lands as far down as Louisiana, have more to fear from an epidemic condition once the disease is established there.

On the other hand, the limestone regions where white clover succeeds well, get rid of the disease readily. Texas has apparently had two or three disease spots, which cleared readily without treatment.

Such statements are valuable in helping find, sooner or later, the actual causes of bee diseases. We are pretty nearly as ignorant as children on these matters, and we will have to go to school a long time before we can master the question of brood diseases.

A very good point, also, was made in the statement that small hives are less immune than large hives. This is plausible, since colonies in small hives never can be as populous as those in large hives. Tally one more point for the large hives.

Another point is made for the Italian bees, who get rid of the disease much more readily than the common bees.

### American Foulbrood

Another very good Bulletin of the Department of Agriculture, No. 809, on "American Foulbrood," by Dr. G. F. White, has been published lately. It is quite exhaustive, contains all the latest experiences of this scientist, with 8 plates showing the disease at different stages and microscopic studies of "Bacillus Larvæ," the cause of the disease. It may be had from the Bureau of Entomology at Washington in the usual way. Beekeepers who fear the disease should send for this Bulletin.

### An Apology

On page 49 of the February number, we complained of the borrowing of an article by the British Bee Journal without giving us credit. We now learn that it was an oversight on their part. We should have surmised this at first, as we ought to know they would not intentionally do such a thing. We apologize for the criticism.

### Swarms From Large Hives

On page 6 of "A Manual for an Easy Method of Managing Bees," published by John M. Weeks, Salisbury, Vermont, in 1837, we read:

"The lower apartment of the hive, where they store their food, raise their young bees and perform their ordinary labors, should hold as much as a box 12½ or 14 inches square in the clear. If the hive is much larger, with the chambers in proportion, which should hold about two-thirds as much as the lower apartment, the bees will not be likely to swarm during the season. Bees in large hives never swarm. . . . " --

It seems that some people had already noticed, as early as 1837, that bees in large hives did not swarm as much as those in small hives. Yet some beekeepers of the present day would like to convince us that the size of the brood-nest has nothing to do with the swarming propensity.

### Wiring Foundation

In the present number we give two more articles on wiring foundation. While we do not wish to certify that there is nothing more to be said, we know these are both practical men and worthy of hearing. Before long the average beekeeper will know positively how to fasten foundation so that it will not sag at all.

### Death of Another Bee Woman

We regret to announce the death of the wife of our old corespondent, Ph. J. Baldensperger, the former Holy Land apiarist. Debora Struve was born at Buffalo, N. Y., November 26, 1861. Married to Ph. J. Baldensperger in 1884, in Palestine. A silent woman apiarist, whose name never was published, but who, nevertheless, worked faithfully and persistently at the apiary.

### In British Columbia

Bulletin No. 30, "Guide to Beekeeping," of the Department of Agriculture of British Columbia, by F. Dundas Todd, is a 68-page treatise, with numerous engravings, neat and clear in type, covering practically the entire field in a nutshell. We presume that it is sent free to the British Columbia beekeepers. It is worth having.

### Centenary of Hruschka

L'Apicoltore of December last informs its readers that this year occurs the centenary of the birth of the inventor of the honey extractor, Hruschka. He was born in 1820. He invented the extractor in 1865, or about that time. This invention, which has enriched beekeeping, never brought him a cent of profit, for he took no patent on it, but gave it freely to the world. He was certainly one of the benefactors of mankind.

### Illinois State Association

The secretary of this association, G. M. Withrow, Mechanicsburg, Ill., announces a bulletin to the members, to be published monthly or quarterly. This has already been done by the Michigan Association, and is a good move. Send your membership dues to him. It will entitle you to this quarterly, the State Annual Report and a year's subscription to one of the three leading bee magazines, American Bee Journal, Gleanings or Domestic Beekeeper. Fees $1.50.

## MOVING BEES A LONG DISTANCE

### How 600 Colonies of Bees Were Moved From Kansas to California in a Freight Car

By Roy Bunger

Following the failure of our honey crop last year, we were more than ever anxious to move to California, as many another beekeeper has done.

We began moving our yards (nearly 600 colonies in 10-frame hives) near town about October 1, and had only about 100 colonies placed there when the inspector, Mr. Whitehead, arrived to begin inspecting. This work took up 10 days of our time

We finished hauling all healthy colonies near town, united about 40 of the weaker ones, finished up the usual routine of preparing them for winter, about November 1. On account of the high freight rate on an automobile we decided to drive the one through that we used in this work, a Dodge Commercial, which weighs 2,600 pounds.

The freight rate demanded on this car was $7 per 100 pounds, so it would have cost about $182, but even at this rate I am not sure but it would have been cheaper by freight than by driving it through as we did.

We left our old home at Eskridge, Kans., November 3, and drove overland, arriving in San Bernardino about November 18. We came over the National Trail, which was very rough.

After visiting friends and relatives, and attending the short course for beekeepers, I found Mr. B. F. Stanley, County Inspector of San Bernardino County, who acompanied me to help find a location. To eastern beekeepers this might seem like an easy matter, but in a county of over 50,000 colonies it is not so easy as it seems.

I left San Bernardino December 12 and arrived at Eskridge three days later, where work of making moving screens was immediately begun. The thermometer was hanging around zero at this time, hives were covered with layers of ice, which was quite a change from California orange blossoms.

It was necessary to get part of the wooden material for these frames from a factory at Riverside. The material for these frames is very light and cost 5 cents each here. It was necessary to ship this material to Kansas by express, which cost over 10 cents for each frame, which is another case of transportation costing more than double the original value of the article.

I used the ordinary pearl screen for this frame, which I made by nailing together two sides and two ends, then tacking a screen on this, and next laying four more strips on this in such a way as to cross ends. Then nail these strips on the frame so the edges of the screen will be held by the nails, also by the upper and lower half of the frame.

This work was completed just before Christmas. The screens were nailed on the hive-bodies with four 6-penny nails, then the covers placed back on the hives. Christmas day we placed a slat entirely over the hive entrance, closing this very tight. Before doing this it was necessary to scrape the ice away from each entrance, as the thermometer was still hanging near the zero mark.

On the following day we hired a large truck and began hauling bees to the car, 48 colonies to each load.

The accompanying photograph shows the truck being loaded. The entire car was loaded before night.

These hives averaged 58 pounds each as they were hauled to the car.

The weather turned suddenly warm that day and the bees were badly in need of a flight, as some colonies were badly affected by dysentery, due to poor stores. The following day we began loading another car with emigrant movables, also including over 1,000 supers, mostly drawn combs, which filled over half of a 40-foot car. The other half of the car was loaded with bee supplies and furniture, and last the family cow was loaded in a small space between the doors. We were ready to start on the long trip by freight, which required eleven days.

I left Eskridge December 29 and arived at Upland January 9. The following day we were ready to begin unloading early, but the agent refused to allow anything unloaded till he could get the freight rate from headquarters at Los Angeles. This he failed to do till nearly noon, which was very bad for the bees, as the weather was very warm here. They were given plenty of ventilation in loading, the car being 8 ft 7 in. inside width by 40 ft in length.

On account of scarcity of box cars it was impossible to get a ventilated car, so it was necessary to keep the doors open at all times. For this reason it is necessary for a person to be in charge of every car of bees. These hives were loaded lengthwise in the car, which was wide enough to allow a small air space between each of the 6 hives which were placed in each row, after the cover and inner cover had been removed.

I had purchased rough, heavy fencing boards and had them sawed in 2 strips at a mill, then sawed them just the right length to fit in the car crosswise, 2 strips being placed over each row of hives and nailed to the hive bodies to prevent shifting. Another row of 6 hives was then placed on these and strips on top of this row, nailed as the others had been, till they were stacked 5 high in rows all over the car. They were fit in so tight no hive could shift lengthwise. As all hives are exactly alike this was an easy matter. There was no loss in shipping, every colony came through alive.

Our bees are doing well and on this date (March 7) have many colonies working in supers; also quite a number of young queens laying, which we have reared since coming here. The cost for truck hire was $45; freight was $1,107.87.

California.

ESKRIDGE KANS
DODGE TRUCK

Roy Bunger and the car he drove through to California

## Killing Wax Moth

W. S. Pangburn, on page 90, March number of the American Bee Journal, on the use of carbon disulphide for killing eggs of the wax moth, requires too much labor and material for economy. While I don't know whether by my method I kill the eggs or not, I never treat but once, and when treated combs are properly covered; they have never needed any further treatment. My management consists of a galvanized iron can 18x22 inches by 6 feet deep, and a pan 20x24 inches by 2 inches deep. The pan is set on the ground and leveled, with about 1 inch of water in it. Two small sticks are placed in the pan to pile the hives or supers on to keep them out of the water.

The combs to be treated are piled as high as the can will cover, no attention need be paid to tight joints between hives.

About a tablespoonful of carbon disulphide is poured over the tops of the frames over the upper section, a super cover immediately placed over it, and the can inverted over the pile by means of a small rope attached to the upper end of can and a pulley fastened to some support.

The lower or open end of can rests in the pan of water, closing it absolutely air tight.

I don't know how long it is necessary to leave them covered for perfect results. I have never known worms to hatch in combs that were treated for four or five hours, and properly piled away and covered. I sometimes leave combs in all night, or take them out at my convenience.

Whenever I find combs becoming wormy, I "run them through the can," and that ends it, with me.

E. L. HALL.

Michigan.

## Wisconsin Establishes Legal Honey Grades

By S. B. Fracker

Acting State Entomologist of Wisconsin

Almost the first agricultural industry to take advantage of the establishment of State marketing facilities in Wisconsin was that of beekeping.

The last legislature created a division of markets for the grading of all agricultural products and finding markets for them. The honey producers said, "Here is something we have been needing a long time. Let's take advantage of it." Resolutions were consequently passed at the State beekeepers' convention in December asking the division of markets, the crop reporting service, and the State Entomologist to co-operate in providing information which would result in improved marketing facilities for the State's annual honey crop of about 4,800,000 pounds.

The plan worked out includes monthly crop and price estimates during the summer and fall, the establishment of legal compulsory grades, and the help of the division of markets in locating markets for honey.

For establishing standards for grading, a marketing committee was appointed by the beekeepers and a set of proposed grades was drawn up by them. The division of markets held hearings on the subject in several places in the State. Many beekeepers who were unable to attend the meetings wrote out their suggestions and mailed them to Madison.

A surprising feature of the hearings and correspondence was the fact that no opposition to the establishment of grades was expressed by anyone. Several were anxious to be permitted to sell all or some honey ungraded, but none were opposed to marking it so. For the small beekeeper who does not wish to grade his honey, a rule that every such section or can shall be marked "Ungraded" with a stamp or in any other convenient way, relieves the regulations of any possible burden.

Grades have now been defined and wil go into effect on August 13, 1920. After that date every section of comb honey and every can or other container of extracted produced in Wisconsin and sold or delivered within the State or outside, must be stamped or labeled with the grade, and color of the honey and a number showing the producer or packer, or else be marked "Ungraded."

The grades established are expected to result in improving the quality and finish of Wisconsin honey and to put a premium on care in handling it. Too often "honey is honey," especially on the retail market; the storekeepers buy wherever they can for the lowest price and sell for all they can get.

Every beekeeper who wishes to sell or deliver any honey under these grades is required to secure stamps from the division of markets. These will be purchased wholesale and supplied at cost. Numbers will be assigned by the division in the order of receipt of the applications. Each beekeeper will then be responsible for the accuracy of the grade label on every container on which his number is used.

Many beekeepers will sell their product "ungraded" and label it so for the next year or two. But is has been the universal experience that marketing a first-class product "Fancy" or "No. 1," so extends the market and increases the demand that undoubtedly all commercial producers will register with the division of markets and secure the right to grade their honey within a couple of seasons.

A problem faced in establishing standards was the fact that improper labeling would subject the offender to a fine. It was thus necessary to define the grades much more clearly than the honey associations do, assigning a definite meaning to such expressions as "well-filled," "firmly attached," and "uniformly colored," which never seem to have been defined before.

Under the statute providing for grading, such classes as "Not permitted in shipping grades," cannot be established, but unmarketable honey is covered in the definition of "good quality" in such a way that it must be sold "ungraded' 'if at all. If unfit for human food, of course, it comes under the food laws.

The grades outlined differ from the Colorado rules in providing for grading finish as distinct from color, but closely resemble the standards adopted by the National Beekeepers' Association in 1913, except in the provision of a minimum weight for each grade. The letters in parenthesis in the following outline of the grades as finally established, refer to the definitions at the close of the grading rules.

### Wisconsin Fancy

Honey of this grade produced in Wisconsin shall consist of (a) good quality comb honey in the different (b) colors known by the terms Water White, White, Light Amber, Amber and Dark; in which sections are (c) well filled and (d) well cleaned and the combs (e) firmly attached, (f) not projecting beyond the wood, (g) uniformly colored throughout, (h) evenly capped and entirely sealed except the cells in the outside row next to the wood, which may be unsealed. No section in this grade is to weigh less than 13½ ounces gross or 12½ ounces net.

Honey packed for sale under this grade shall be in new best grade sections weighing not more than one ounce and be packed in new cases. Each section and case shall be stamped with the official stamp (Wisconsin Fancy), stating color and packer's number.

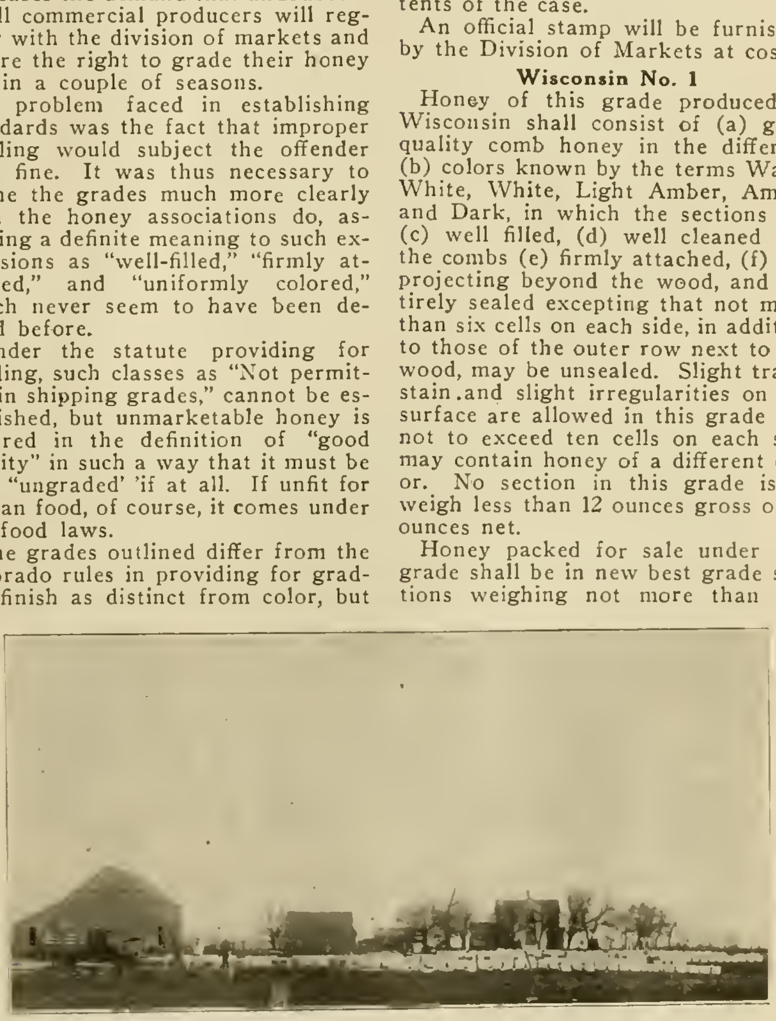
The front sections in each case shall be a true representation of the contents of the case.

An official stamp will be furnished by the Division of Markets at cost.

### Wisconsin No. 1

Honey of this grade produced in Wisconsin shall consist of (a) good quality comb honey in the different (b) colors known by the terms Water White, White, Light Amber, Amber and Dark, in which the sections are (c) well filled, (d) well cleaned and the combs (e) firmly attached, (f) not projecting beyond the wood, and entirely sealed excepting that not more than six cells on each side, in addition to those of the outer row next to the wood, may be unsealed. Slight travel stain and slight irregularities on the surface are allowed in this grade and not to exceed ten cells on each side may contain honey of a different color. No section in this grade is to weigh less than 12 ounces gross of 11 ounces net.

Honey packed for sale under this grade shall be in new best grade sections weighing not more than one



The bees had all been brought to one yard near the railroad. From here they were hauled to the car with a big truck.

ounce and be packed in clean cases. Each section and case shall be stamped with the official stamp (Wisconsin No. 1), stating color and packer's number.

**Wisconsin No. 2**

Honey of this grade produced in Wisconsin shall consist of (a) good quality comb honey in the different (b) colors known by the terms Water White, White, Light Amber, Amber and Dark; in which the combs are (f) not projecting beyond the wood, are attached to the sides not less than two-thirds of the way around, and are entirely sealed excepting that not more than a total of 60 cells in addition to those of the outside row next to the wood may be unsealed. Where 20 per cent or more of the cells contain honey of a darker color than the remainder, the sections shall be marked with the darker color. Honey in badly stained and propolized sections is not permitted in this grade. No section in this grade is to weigh less than 11 ounces gross or 10 ounces net.

Honey packed for sale under this grade shall be in sections weighing not more than one ounce and be packed in clean cases. Each section and case shall be stamped with the official stamp (Wisconsin No. 2), stating color and packer's number.

**Ungraded**

Comb honey may be packed for sale without conforming to the requirements for Wisconsin Fancy, Wisconsin No. 1 or Wisconsin No. 2, provided that it is stamped or marked "Unclassified" or "Ungraded."

**Wisconsin No. 1—Extracted**

Honey of this grade produced in Wisconsin shall consist of (a) good quality extracted honey in the different (b) colors known by the terms of Water White, White, Light Amber, Amber and Dark. The honey shall weigh not less than 12 pounds per gallon at 60 degrees Fahrenheit.

Honey packed for sale under this grade shall be in new containers. Each container must be stamped with the official stamp (Wisconsin No. 1 Extracted Honey), stating grade, color, net weight and packer's number.

An official stamp will be furnished by the Division of Markets at cost.

**Ungraded**

Extracted honey may be packed for sale without conforming to the requirements for Wisconsin No. 1 Extracted Honey, provided that it is stamped or marked "Unclassified" or "Ungraded."

**Explanations of Grade Requirements**

(a) "Good quality" comb honey means honey which is commercially salable, not containing pollen or honeydew, not extensively granulated, poorly ripened, sour or weeping, and not in leaking, injured or patched-up sections.

"Good quality" extracted honey means honey which is not sour and has not been contaminated by honeydew, excessive use of smoke, dirt or foreign materials of any kind.

(b) "Color"—The color standards of the Root honey grader shall be deemed official for determining color of comb or extracted honey. The five official colors are Water White, White, Light Amber, Amber and Dark.

(c) "Well filled" means 80 per cent of area within the sections shall be occupied by sealed cells.

(d) "Well cleaned" means free from propolis or other stain.

(e) "Firmly attached" means that the comb shall be attached to wood sections at least 85 per cent the way around.

(f) "Not projecting" means no part of the comb shall project beyond outer edge of section.

(g) "Uniformly colored" means that all the cells contained in any section shall be of the same color.

(h) "Evenly capped" means combs shall be free from pronounced irregularities in the surface.

(i) "Well strained" means honey which does not contain particles of wax or other materials which will not pass through two thicknesses of cheese cloth.

Ready for a Sunday Drive.

## A Sugar Report

We have just received the annual report of the American Sugar Refining Company for 1919. It has 44 pages and contains, besides a financial statement of interest to stockholders of the company, general information which may be of interest to our readers.

Among other things it is stated that the United States consumed 16 per cent more sugar in 1919 than in 1918, the consumption reaching over four million tons, for the first time in the history of the country. This sugar came from the following sources:

Cuban cane sugar, two million tons.

U. S. beet, one million tons.

Hawaiian cane, one-half million tons.

Porto Rico, one-fourth million tons.

Louisiana, etc., balance.

The total production of sugar for the year 1919 was over 16 million tons, contributed by countries in the following order of importance. Cuba, Europe, British India, Java, United States, Hawaii, Japan and Formosa, Porto Rico, etc.

It will be seen that Europe is in second place, whereas, previous to the world war she produced over half of the world's sugar.

The report predicts that with the resumption of normal in the European countries, which may take several years, there will be keen competition in the sugar markets, which should bring prices to the American consumer down to a much lower level. Prices have already dropped considerably.

In 1900 the American Sugar Refining Company had 60 per cent of this country's sugar business. It now has but 27 per cent. M. G. D.

## Twentieth Century Marketing Methods

Read at the National Meeting by Chas. B. Justice.

The experiences I have had, in organization and in marketing, have convinced me of the absolute necessity for up-to-date information at all times. All knowledge is merely accumulated information. Information in marketing can be provided in the form of statistics after the season's operations are over, or sufficiently in advance of shipment to guide producers in their marketing efforts. It cannot be provided, however, without an organization delegating power and authority in the hands of those chosen to secure and disseminate this information.

It is clear to all that beekeeping problems in the East are dissimilar to the problems in the West, and it is not likely that Eastern beekeepers will support any project which has for its principal object marketing. All this was kept clearly in mind when, at the Kansas City conference, it was decided that the American Honey Producers' League must be organized to operate along lines of common interest to beekeepers everywhere, and not upon lines which serve the beekeepers of one community or section better than those of another. I believe I speak the sentiments of all present at Kansas City when I say that the two principal functions which the League hoped to accomplish were, first, a stimulus to organization among beekeepers everywhere, and, secondly, a prompt securing of information with respect to movement of crops and a distribution of this information to all beekeepers, thus guiding them sufficiently in advance of the movement of their crops to enable them to act intelligently in their marketing. The beekeepers are not now apprised of the annual production, of its distribution, of its quality nor of the price at which it is sold.

The beekeepers of New York and all eastern sections are interested to know just what the annual production of the tremendous western areas will be, each year, and they would like to keep informed of the grades established in the west, of the movement of these crops on to the market, to which markets they are being principally sold, in what sized packages moved and at what prices. This information is vital to them and they will support within a reasonable cost any bureau or organization which necessitates the expenditure of lots of

Twentieth century marketing methods have brought about just these conditions in many food-producing lines, hence this is no experiment except in the sense that it was to be achieved in a manner strictly co-operative. The same result is being accomplished by large organizations everywhere who are affiliated together through a common sales agency. The lack of information among producers is responsible for needless competition in the manner of price cutting, glutted markets and ruinous carry-overs. With advance information at hand, the beekeeper is provided with up-to-date tools and avoids these needless and fatal mistakes.

The first steps toward ideal conditions appear to be the formation of strong and closely knitted state or regional organizations, so that the goal of national organization may be ultimately and more quickly reached. We hope that 1920 will bring about a better understanding of the inter-dependency of the beekeepers of the East and those of the West, and that a common sympathy will spring up between them upon the objects they have in common, that the human doubts, distrusts and suspicions which hold back mankind from achievement will give way to a sincere, warm-hearted determination to work hand in hand for the emancipation of the industry.

The incentive is much. We hold in our hands the destiny of the beekeeping fraternity. Our product is without a peer. None can control it except ourselves. All forward-looking men and women of strength and courage should take hold and build up organizations which can later sweep them on to prosperity and success through a widened channel or outlet for their products.

The beekeepers of the East will realize that the large organizations of beekeepers in the West are, through twentieth century methods, standardizing their packages and grading their products, giving them an appeal to the buying public in a volume heretofore unknown; that they are widening their channel of outlet, creating new markets and securing to themselves a better price by the elimination of the speculative buyer, and they will, we believe, accept our view that the better prices, secured by us, give them at the same time a wider consumption of honey and equal chances to benefit in this whole situation. We shall be glad to know that the beekeepers of the East accept this view and that they will be joining henceforth more actively in our councils and in our future co-operation.

California.

## The Motor Truck and Outyard Beekeeping

By C. W. Aeppler

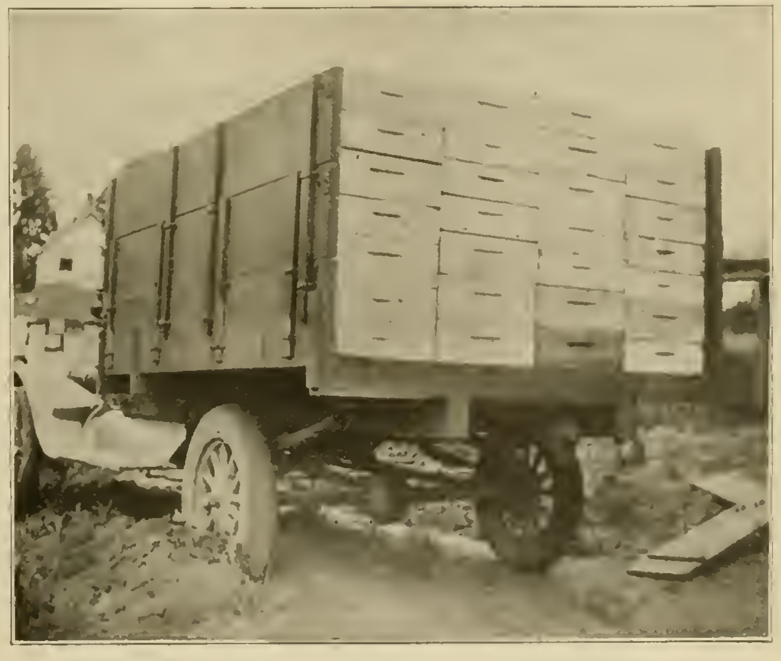
A motor truck is now considered an essential in outyard beekeeping. The selection of a motor truck on the part of the beekeeper is sometimes a rather difficult task. Those who are operating upwards of one thousand colonies sometimes advocate the use of a large truck, with a capacity of 2 or 3 tons. But even then, such a truck is supplemented a large part of the year with a lighter machine, the operating expenses of which are much less.

A beekeeper with only one or two outyards may find a common roadster type of automobile, provided with a suitable platform, sufficient for his needs. However, the time may present itself that the beekeeper's needs are increased, and that such a machine is no longer of sufficient capacity to haul large loads of supers.

When this time comes there are two things that may be done. He may purchase a truck to be used entirely for hauling purposes, and retain his roadster for family use, or he can convert his roadster into a truck capable of hauling a ton or more. If he does the former, it necessitates the investment of considerable additional capital; if he does the latter the thought at once is in his mind that his machine will be too unsightly for pleasure driving or taking his family to church on Sunday.

Assuming that most beekeepers are situated as I am, the latter would seem the more logical. My idea of a motor truck for outyard work is one in which there is the minimum amount of fuss, such as rope tying, which one so often has the opportunity to see. Where one wishes to haul supers full of combs over all kinds of roads, it is almost impossible to tie them on in such a way that they will stay on. Furthermore, this tying of ropes necessitates the expenditure of lots of time. Also at the outyards it is not much fun to tie the ropes when hauling supers of honey. All of this extra fuss excites the bees to robbing, because of the probable exposure of supers of honey. Sometimes the hauling is done in the evening, and if the beekeeper must fumble around in the dark, tightening ropes, his temper is apt to be anything but sociable.

My idea of such a truck is best shown by the accompanying photographs. The side-board arrangement is based on the old-time method of wagon-box construction. One set of side-boards and one end-board are permanently fastened to the truck floor, and when only a small amount of hauling is done, the truck can be used in this fashion. Also, I don't think that it looks so bad but that



A load of 112 shallow extracting supers ready to go to an outyard.

the family can go to church with it, when so arranged. In hauling full loads of honey one extra set of side-boards is sufficient. When hauling loads of supers full of drawn combs, honey containers, packing for wintering, etc., all three sets of side-boards can be used to advantage. It is only the work of a few minutes to dismantle the truck, and at the outyards it is only the work of half a minute to slip in the end gates after the truck is loaded and one is on the way. There are no ropes to tie—no fuss, no worries about the load being lost on the road.

The side-boards should be made of light lumber, such as white pine. However, the supporting braces should be of hard wood, such as oak or birch. These supports need not be over 2½ inches wide. The end gates are prevented from falling out by a series of cleats, and at the top an iron rod, provided with threads and a wing nut, as commonly used in every farmer's wagon box. Possibly such an arrangement as this will weigh a trifle more than an arrangement whereby the boards are slatted. However, when using slats, the extra braces, bolts and screws to hold them together will almost make up this small extra weight. But even though it does weigh a few pounds more, it is well worth the extra load that must be carried.

It is well to make the box of such a size that it will accommodate a given load of supers without any shifting around. Mine is 66x82 inches inside measurements, which allows a load of 112 shallow supers or a load of 64 Langstroth supers to be taken. Of course, when full of honey such a large load is not possible.

Such a truck body can easily be built by the beekeeper, and the total cost of the material need not exceed $30 to $35, based on present prices.

Wisconsin.

## How Shall We Wire Frames?

By W. S. Pangburn

The wiring of frames has been in vogue for some time, and it would seem long enough that some method should be adopted as considered **best**.

However, this is not the case, if one is to judge from the different methods that have appeared, and are still appearing in the bee magazines, and from the many imperfect combs found in use by beekeepers.

Some beekeepers seem to think that because they have wired their frames and used full sheets of foundation, they have solved the problem, when, as a matter of fact they may have very few perfect combs.

The extracted honey producer has a much better chance to discover a poor brood-comb than the average comb-honey producer, who has perhaps little chance to see his combs entirely empty. A very poor brood-comb when filled with honey and capped, may put up a very good bluff for a good comb, but when uncapped and extracted, may be a very poor comb, and remind one of the saying that "little smears of powder, and little dabs of paint, make a very pretty thing of a thing that ain't."

Sometimes one is almost forced to believe every beekeeper has a method of wiring of his own, and all give perfect combs, and this is an unfortunate thing for the beginner, who has not had experience enough to sift the good points from the bad.

Some seem to think the more complicated the wiring the better the results; others the fewer wires the better, and both may be wrong, while the beginner, who follows either, may spoil several hundred combs before finding it out.

Some of the methods that have appeared as solving the problem of getting perfect combs through the wiring alone, have been purely imaginary on the part of the introducer, and such things should not be permitted to pass without the proper comment.

It does not matter to the beekeepers who have spoiled enough combs by some of the poor methods given, and have learned enough to reason for themselves, but for the benefit of the beginner, who is looking for some **best** way to wire his combs, and wishing to make no more mistakes than necessary, something should be done.

All we ever see advocated in the supply catalogs, and most of the bee books is the 4 horizontal wires.

That this system has been weighed in the balance and found wanting, is proven very conclusively from the following facts. That grand old beekeeper, Dr. Miller, realized years ago that the system was faulty, and invented and used little wooden splints. Many beekeepers paint the upper part of the foundation with wax just below the top bar, to give the added support, and last, but not least, use the many different methods of wiring.

What we need to do is to select one of the best, and forget the rest.

Any young beekeeper who reads both Gleanings and the American Bee Journal for February would be like the editor of Gleanings, "between the Devil and the deep sea," when it comes to wiring combs.

To be frank, Fig. 7, in Gleanings, reproduced herewith, is, in my opinion, the best system of wiring that has come to light. Any beekeeper who has examined combs for defects, and knows where the defects usually come, and has studied the cause, can see at a glance this plan has some excellent points in its favor. The added support is given where needed, just below the top bar, and in the center.

The loose wiring that was once advocated spoiled more combs for us than any one thing, and I can do no better than quote Morley Pettit in the American Bee Journal: "This at one stroke did away with any benefit the wires might be."

Apples fall to the ground through force of gravitation, and combs from too much weight when too tender to bear it. We know they never go up, and we also know they have no other support, usually, than wires, in being drawn. Why, then, do away with the support by using slack wires?

If we were to make any suggestions as to improving the wiring of Fig. 7 it would only be to add a fifth wire. However, this may not be necessary with this system of diagonal wiring, but we have never thought 4 wires enough with the regular horizontal wiring. Not enough support where sagging occurs, and too much buckling between wires at times.

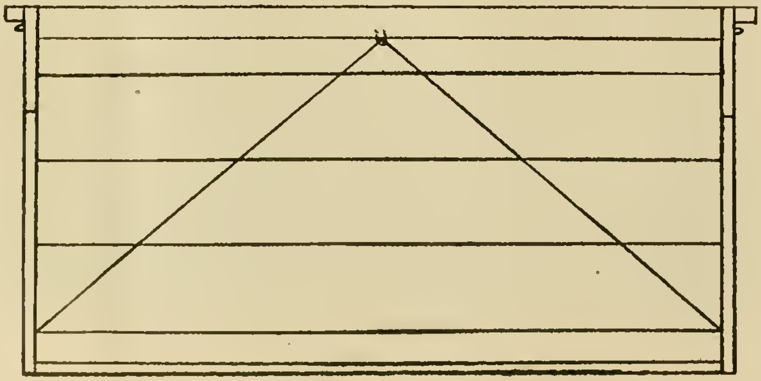
Some beekeepers will, with this method, like some of the others, think it "too much bother." These three words, along with too light a foundation, have spoiled lots of combs. Some beekeepers are proud to tell that they use no wires, and that they are not necessary, and one is reminded of the old adage that "fools rush in where angels fear to tread."

Far too many beekeepers are trying to get along with too little work, and too light foundation, at the expense of the finished product.

Next to a good location and a prolific queen, perfect combs are the beekeeper's greatest asset. A good brood-comb, barring American foulbrood and accident, will last the average beekeeper a lifetime. Can we afford to take chances in some minor matter of wiring, or a slight cost in foundation when so much is at stake?

After the beginner has been given the proper method of wiring he should have equally good instructions as to the proper handling of the frames while being drawn, and afterwards until filled to top bar with brood. Without this precaution they might spoil their combs with most any method of wiring, but this is another subject.

Center Junction, Iowa.



## Rearing the Best of Queens for Yourself

Read at the National by Jay Smith

At the risk of being accused of "harping," I am going to state that few of us realize the importance of having vigorous young queens at the heads of all of our colonies. Elisha Gallup said: "Around the queen centers all there is in apiculture." Doolittle said: "Upon no other one thing does the honey part of the apiary depend so much as it does upon the queen." Dr. Miller says: "The queen being the very soul of the colony, I hardly consider any pains too great that will give better queens." Quinby said: "Too much importance cannot be attached to the necessity of keeping each hive supplied with a good queen." Dr. Phillips says: "Unless the queen at the head of the colony is a good one, it is useless to expect that colony to be productive."

We hear a good deal of discussion as to the best strain of bees, and as to the advisability of breeding from the queen whose colony produced the most honey. The question frequently comes up, "Which are best, the goldens, three-banded, or leather-colored?" While all of these are important, yet I believe what is far more important is **how the queen is reared.** To rear the best queens it is important that they must have the best care from the time the larva hatches from the egg until the queen is mated and laying.

The honey producer who raises his own queens has some advantage over the commercial queen-breeder in that as he requires but a limited number, he can choose the time of the year when the honey flow is just right, and he will usually find it practical to introduce the queen-cell to the colony instead of allowing the queen to become mated from a nucleus hive, thus saving the work and expense of nucleus hives and the risk of introducing the laying queen. The disadvantage of this system is that it is necessary to keep the colony longer without a laying queen. But if the cells are produced as the honey flow is coming on, the colony that is made queenless will lose little for the workers that would have hatched if their laying queen had been left with them would not become fielders till after the honey flow was over. Then again, if one should have European foulbrood in the yard, this method of re-queening would be the very best method for eradicating the disease.

I shall not attempt in this short article to give a complete description of queen-rearing, but will dwell upon some features that I believe should be emphasized. For the one who rears over 100 queens per year, I believe, when all things are considered, that the grafting method is to be preferred.

As the honey flow is coming on and the stronger colonies begin to show signs of swarming, and the combs begin to drip nectar when shaken, it is time to get busy at queen-rearing. The method of getting the grafted cells accepted by the use of the queenless and broodless colony is good, but the swarm box has many advantages, provided you have a good cellar where the bees may be kept warm on cool nights and be kept cool on hot days. As most are familiar with the process of grafting, I will not dwell on that further than to state that I believe much better results will be obtained by the use of royal jelly. Some claim that they get good results without using it, but I never could. The jelly should be diluted with clear water till it is as thin as royal jelly surrounding larva that is just hatched. J. W. George, of El Centro, Calif., informed us that royal jelly can be bottled and kept from one season to the next. I tried this the last season and find it one of the most convenient little tricks of the trade. A shallow screw cap jar with a wide mouth is suitable for storing this jelly. If you have no such jar, you might be able to find one if you rummage around in your wife's manicuring outfit. They usually have these little porcelain jars filled with pink salve or freckle dope or something. You can clean this out and put the contents into a tin can and present same to your wife with your compliments and make off with the little jar. Sterilize it thoroughly by boiling, for the bees seem to object to the smell that comes with it. This jar may be carried in the pocket, together with a jelly spoon, and when you are working among your bees and find any royal jelly, you just pull this jar out of your pocket and can it right there. From a colony that is preparing to swarm you can get enough to graft several hundred cells. For filling the swarm box a tin funnel is convenient. I prefer a swarm box large enough to hold five frames, but only two frames are used. These are placed one at each side, leaving the space in the center to accommodate three grafted cell bars. In filling the swarm box it is well to place it on scales, so that the weight of bees may be accurately known. Between four and five pounds of them should be used. These must be taken from a strong colony in order that the brood left in the hive will not be neglected. The frame containing the queen is set at the side of the hive and after the swarm box is filled she is placed back into her hive again. This box is filled just before noon and the cells grafted about 4 p. m. Usually the bees confined in a swarm box will not take sugar syrup, but if honey diluted with one-fourth water is given they take it readily. This is given in a Mason jar with perforated cap and is placed in the hole that was used for filling the box with bees. A swarm box prepared in this manner will accommodate sixty cells. It has not been an uncommon occurrence to have every cell accepted and every one finished into long, perfect cells. As a rule, however, we get about 55 accepted and when given to a finishing colony, they usually find one or two more that do not suit them, and they tear them down.

The bees should be left in the swarm box till noon the next day, or they may be released any time during the afternoon of the following day. In the cellar or basement the bees should be kept in the dark. I had a basement made of concrete, and we stacked up extracting supers to the ceiling to keep out the light. A room was made in this way with the opening facing the wall so that no direct rays of light could enter. In this "dungeon" the bees remained quiet and kept right at the task in hand. The best way to get cells completed is over a queen-excluder in a two-story hive with a good laying queen in the lower hive. But in order to get the best results, this hive must be rousing strong. It is well to have both hive bodies **completely filled with brood.** Extracting supers may be put on top of all. This will necessitate some lifting at times, but it is well worth it. One bar of from 15 to 20 cells is given to a colony to be finished. The cells should be left with this colony that finished them

Spring in Tennessee.

until the tenth day after they were grafted. They will then be ripe and will hatch some time late in the afternoon of the eleventh day. These cells should be handled very carefully on the tenth day or cells will fail to hatch, or crippled queens will be the result. The colonies you wish to requeen should be made queenless at least 24 hours before giving them a cell, and if any trouble is experienced from the bees tearing down the cells, they should be made queenless 48 hours. However, if the nectar is coming in and the weather is fine, 24 hours will be long enough. But I can almost hear this question asked: "Why not use a cell protector?" Because if you wish to get the **best** results in rearing the **best** queens, you should not use them.

After conducting some experiments along that line, I believe that many do not realize that one of the cardinal points in rearing the best of queens is "proper incubation." To secure perfect incubation of queen-cells the bees must have free access to the cells at all times. Cells will not hatch perfect queens at all times if they are allowed to hatch in cages or cell protectors, for the reason that the bees cannot cluster around the cells and keep the temperature just as it should be. Where the bees have the opportunity, they will closely cluster about the cell and just before the queen is to hatch they will remove the wax, leaving the bare thin cocoon through which the virgin queen may be seen moving about. The cell cannot have this care if placed in a cage or cell protector. Again, it is of the utmost importance to have the virgin queen hatch among the bees, for a virgin that has just hatched is a very frail, weak affair, and needs all the nursing and attention she can get if it is queens of the first quality you are after. The method just described, if properly carried out, eliminates all doubtful features. If it is desired to use nuclei, the same method is employed, only the cell is given to the nucleus instead of to the full colony. This will necessitate introducing the laying queen to the colony, which is another story.

Indiana.

## Spring Management of Bees

By Kenneth Hawkins

Spring is the season when the poor beekeeper attempts to remedy his mistakes of the fall before and when the better beekeeper devotes his energy to keep the bees working in the channels of increasing strength, which he provided for in months gone by.

The three prime essentials of spring management which must be supplied to every colony of bees, have been repeatedly emphasized by George S. Demuth as: "Room, stores and protection." The value of these requisites is apparent to every beekeeper who is thoroughly acquainted with what goes on inside his colonies in spring.

These requisites are the means of providing the greatest strength in bees per colony at the beginning of the main honey flow in your locality. No colony of bees can succeed in gathering the maximum yield of surplus honey if they are compelled to use part of the time and nectar of the honey flow in building up colony strength.

### Definition of Room and Stores

The amount of room necessary for a colony depends on the strength of that colony. Under better beekeeping methods, spring finds the bulk of the colonies at approximately equal strength. This reduces the labor of spring management. Room in this case means provision for the maximum egg-laying capacity of the queen and such additional room as may be necessary for the first surplus stored for the daily needs of the colony. The trend of modern beekeeping indicates the value of having all this space in one hive body. The "Standard" 10-frame hive body is seldom ample at this time.

Most prolific queen bees can occupy more than 10 Hoffman frames when settled warm weather is imminent, and beekeeping practice with present equipment has worked toward two full brood-chambers for the use of the queen and the storage of the honey necessary for safely providing for the brood.

The amount of stores necessary at this time should be more than sufficient to feed the brood already in the hive for at least a week, in case of inclement weather or failure of the early flows. A larger supply is better. This should probably be the equal of not less than four Hoffman frames well filled with honey as a minimum. Running with less, the beekeeper may have to feed at short notice, and frequently suitable feed is not available.

### Uniting Weak Colonies

Where weak colonies are found, they should be united with other weak colonies, until the strength in bees and honey of all the colonies in the yard is nearly equal. The extra queens at uniting may be disposed of at the will of the beekeeper. It should be a very valuable queen to prevent the uniting of a colony which has come through in poor condition.

Where insufficient stores have been left on the colonies the fall before, the colonies should be fed at once more than they need for at least a week ahead, at the first examination. The writer prefers always any type of feeder which feeds above the cluster. Two parts sugar to one part water, by bulk, is an ideal spring feed. In uniting bees in spring it is advisable to unite directly, shaking bees alternately from frames taken from both hives to be united, before the hive where they are to remain. This allows placing the honey and brood all in one brood-chamber and obviates danger of chilling.

Watertown, Wis.

## From a Polish Settlement in Manitoba

By H. W. Sanders

Up here in Manitoba, in spite of a severe climate, beekeeping is on the increase and some very successful apiaries are now being operated. There are many settlements of foreign-born immigrants and they have in some cases brought their knowledge of bees from Europe. At Beausejour, in the northern part of the province, is a settlement of Poles, and on one of the farms is a productive bee-yard, in which the enclosed photo was taken. It shows a colony in one of the home-made Polish hives in which a great many bees are kept in that locality. The hive is interesting historically, because it appears to be a "descendant" of the hive invented by Prokopovitch, in Russia, back in the 30's of last century. He seems to have been a man greatly in advance of his times and the principle of the movable comb was embodied in his hive. He conducted a school of beekeeping in addition to

Spring in the clover region of Virginia

the operation of a great number of colonies, and it may be through this school that his hive reached Poland.

The hive itself shows that the climate of Poland is very much like that of the colder regions of North America, for it is built with double walls and packing between. The frames stand on end in the hive and are gotten at by opening the little door, that can be seen at the side of the hive. To remove the ones at the far side it is necessary to take out each comb between. Originally the hive was not intended for use with a super, the idea being to extract from the outer combs, but the honey flows here are short and heavy and so the owner had bored holes in the top and placed an 8-frame Langstroth super above, which the bees were busy filling with honey. The entrance to the hive is through the round hole in the front. The large cover, which is here shown above the super, is intended only as a shade, as there was another flat cover over the frames in the super.

As will be seen by the rest of the picture, the Langstroth hive is supplanting these hives, here as elsewhere, being so much easier of operation.

The place where these Polish hives score is in wintering, for the tall space within resembles very closely the form of a hollow tree, and this is the natural wintering place for a colony of bees. The double walls with their packing hold the heat well.

The owner wintered his bees in a cellar and sometimes did not take them out till the first of May. Winter losses were small, and the bees soon built up in the spring from the abundance of natural pollen in the woods around. The large hives held plenty of honey.

He said that these hives were better for honey, but that the Langstroth were "better for swarms." This looks as if they were all managed on a let-alone plan, and naturally the shallow hives would be the ones to swarm, where the large, cool, deep, Polish hives would keep their forces together.

Manitoba.

## Stretched Foundation and Sagging Combs

By A. C. Miller

What a merry time the boys are having trying to devise sundry and complex (and incidentally expensive) methods for wiring frames. Some of them are frankly resurrections of ancient ways, long since discarded. It is almost a crime, certainly not far from an unkindness, to throw a wrench in the machinery of their contriving. But unless a real beekeeper is inventing or trying to invent something he is not happy nor really in good standing with the fraternity; so the wrench should be withheld. However, in these days of high costs every saving is welcome and so perhaps I will be forgiven for spoiling some of the painfully devised schemes to prevent the evil of stretching.

Now listen, and pay strict attention to this very simple, almost absurdly simple system. Just **use heavier wire**, No. 26 or No. 28, the former is the better. Yes, I know it is rank heresy to advocate that which was long ago said to be too heavy, but the old "say so" never did appeal to me. Good Dr. Miller, you know, calls me an iconoclast, and I am rather proud of it when I can uproot a wasteful practice, be it ever so well fathered.

Do you hear that awful noise? It is the wail of the boys who have always been told that No. 30 wire is the only proper thing to use, and, dear things, they believe it, too, and he who assails their honored beliefs strikes them in a very sensitive, aye vital spot. I am sorry, boys, but it cannot be helped, for facts are facts.

The supply men will tell you they have no heavier wire in stock nor can they get it for you in time to use. Kindly thank them and run along to the nearest hardware store and buy plain annealed iron wire of the desired gauge and forget that it is not tinned. No, you do not have to have tinned wire, not when you use the heavier weight. Tinned wire has some advantages, but it is far from being essential.

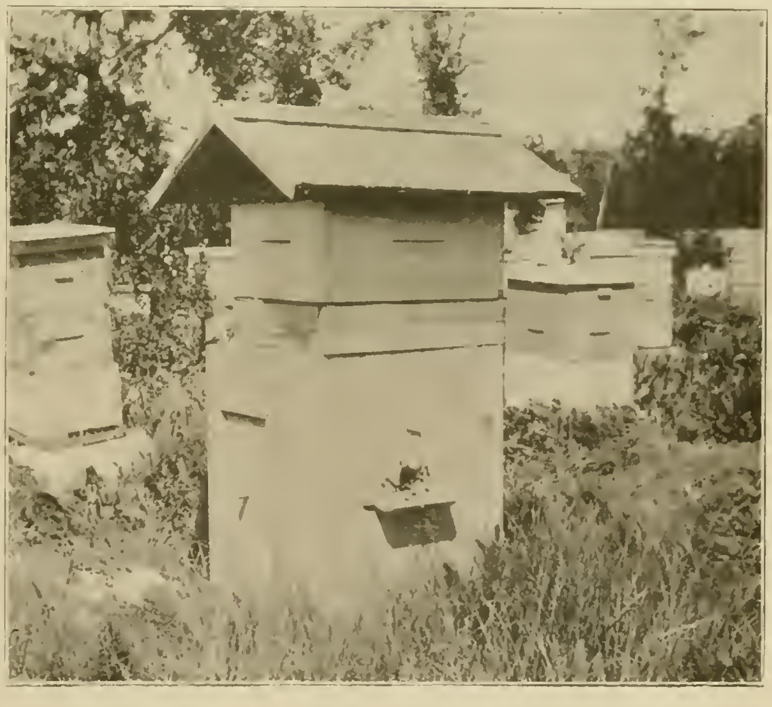
You will probably have to buy the wire in coils, so be careful to put the coil on some sort of a reel, so that you can unwind it without snarling; the heavier wires are not so troublesome as the light, still you should take reasonable care. Then stretch the wire so that all tendency to curl and kink is taken out of it, cut into lengths suitable for a frame, and proceed to thread the frames. You won't die of shock, but you will be mightily surprised that you ever used the old plan of wiring direct from spools.

After the wire is in the frames, make one end fast and take out **all** the slack before making the other end fast. Now you have a really good and suitable grid to which to fasten the foundation.

There are a few other items worth knowing—I know they are, because I know them. The first is, just entirely forget anything like a wedge for fastening the edges of the sheet of foundation. Yes, I know that is savoring of an unkindness to the mechanics who so long and laboriously and expensively to us, devised those wedges, those nice little appliances which so often do not get securely placed and fail to hold the important top edge of the foundation. Just drop the foundation into the groove and fasten it there with a little melted beeswax and rosin, three parts of the former and one of the latter. Paint it along with a **brush,** and forget anything like a wonderful wax tube, or spoon. With a brush you can securely fasten the sheet in place in half the time it takes to put a wedge in place, and when so stuck it stays for sure. The next thing to know is to use an electric imbedder, absolutely the only thing for a truly alive beekeeper to use. If you have electric lights on your place, cut the imbedder into the circuit, for it will work faster and better than with batteries and will not lay down just when you are in a hurry, as batteries sometimes do.

When you start to make the wax-rosin mixture, melt the two separately and strain the melted rosin into the wax, stirring until it is all in. This is to get rid of dirt and sediment which is usually in rosin, and to get a complete mixture of rosin and wax, for if it is not so mixed at the start the rosin is pretty sure to go to the bottom, and while the brush will get stuck on it, you won't.

Providence, R. I..



Polish bee hives.

## Treating Combs for Moths

By C. C. Miller

Allow me to thank W. S. Pangburn for his article in the American Bee Journal, March, page 90. He seems to have gotten down fine the matter of treating wormy combs with carbon disulphide.

He is no doubt right in emphasizing the importance of "confining the gases as long as possible, and giving each set of combs the same strength dose." That the fumes of carbon disulphide are heavier than air is familiar, but that that makes it important to have each set of combs shut up separately is new to me, I confess. But it surely must make a safer thing to let each story have its own dose.

Where convenient it is well to have the treated combs inside a building. Outside, especially with open cracks in a strong wind, the fumes will not remain confined so long.

That failure of long confinement is probably the secret of most of the failures. And there is little excuse for it, seeing it is hardly conceivable that the combs will be needed for use again within a week; for it is hardly worth while to fumigate them if the bees are to have them in that time.

In order to make tight the joints between the stories I like to use clay. Simply mix clay and water stiff enough so the clay will not run, and then, without any scraping, lay a roll of this dough upon the upper edge of the super (no need to scrape the edge), lay your paper over, put on another roll of dough and set on this the next super. You will have a close fit. C. C. M.

## Wiring Again

There have been shown different systems in the American Bee Journal about how to wire the frames. I use five horizontal wires and in the second place I use three brace wires. The advantage of this system is this, the brood-comb will be solid as a rock; it cannot sag; the queen can lay eggs clear up to the top bar and it cannot break down in the extractor. The disadvantages are: It takes more wire and time to fix it this way, and it cuts up the foundation more when the wires are imbedded than the old system does.

JOHN ARBTIN,
Des Moines Iowa.

# BEEKEEPERS BY THE WAY

M. C. Richter, of California.

### A Much-Traveled Beeman

The more a man sees of the way others do their work the better is he prepared to conduct his own business. On this basis M. C. Richter, of Modesto, Calif., should be well equipped. Not only is he familiar with California from one end to the other, but he has visited the beekeepers of many countries, including those of central Europe. In 1911 he became official entomologist to the Government of Chili at Santiago. He also established apiaries of his own in that South American country where he found conditions somewhat similar to California, except that the seasons are reversed.

Richter is one of the best-known California beekeepers, having engaged in honey production in that State for a number of years. He is the author of an extensive bulletin on the honey plants of California, published by the State Agricultural College, and is prominent in the affairs of the Co-operative Beekeepers' Exchange.

## Bees and Chickens

In the February number of the American Bee Journal, page 60, the question is asked if bees can be kept near chickens.

My chickens, young and old, have free access to my bee-yard and spend hours there each day, scratching and hunting for worms and bugs, dead larvæ, etc., especially those of drones which have been thrown out of the hives. My hives are set on boards laid flat on the ground, and they even scratch away narrow boards that I have lying in front for the bees to alight on, and I never yet have known a chicken to get stung. But they are a bit shy of bees buzzing around their heads, and if they get too annoying the chickens simply march out and return again when they feel like it.

On the same page, your reply to the question asked as to the difference between a ripe queen-cell and a fresh one, is not quite in harmony with my idea.

From my observation, a fresh or newly-sealed queen-cell looks somewhat like a peanut shell, except that the depressions are deeper and more prominent and less so toward and including the end, and remain thus until about 12 to 24 hours before the queen liberates herself. Then the bees remove the wax from the end in order to make it possible, or at least a more easy task, for the queen to thrust her sharp mandibles through the cocoon, as if done with a sharp knife. She cuts the cap from the end of the cell.

ELIAS FOX,
Union Center, Wis.

## Queen Supersedure by the Bees

By E. C. Schoemaker

While my experience on queen supersedure is of necessity limited by reason of the number of colonies I have, I am nevertheless absolutely certain of the data I gathered.

During June, 1918, I opened up colonies numbers 4 and 11 and found that supersedure had taken place, unclipped queens being present in each. The queen in number 4 was already laying.

I did not look for the old queens at that time, as I held to the usual theory that only one queen would be tolerated under any condition. About one week later I again had occasion to examine number 11, when, very much to my surprise, I found the old queen. She seemed to be very slow in her movements and did not look at all vigorous. I immediately figured that she had disposed of the young queen that I had seen a week earlier, and had been injured in the combat.

I went on with my examination, and upon lifting out the next frame found my young queen, a perfect beauty, at work filling the cells with eggs. I immediately found the old queen and removed her, and in colony number 4 soon located old and young queens on adjoining frames.

My experience the past summer was even more convincing.

Colony number 8 superseded during late July or early in August. I removed the old queen from this hive on August 30 and at that time bees from the young queen were already emerging.

For two seasons I have been using the queen in colony number 10 as a breeding queen.

On August 15, upon examination of this colony, I found a virgin queen on the frames, so removed the old queen and put her in a three-frame nucleus to see how long she would live.

She laid in about one-half of one side of a Langstroth frame, about 2 or 3 per cent of brood in worker cells being capped convex, which I presume indicated that she was fast becoming sterile.

On August 25th this queen was removed and introduced to another three-frame nucleus, where she laid about one hundred eggs and apparently quit the job entirely.

In one of these nuclei the bees started cells while the queen was present. Each nucleus reared a queen which gave promise of being equal to any I have in my yard.

In all cases of supersedure mentioned in this article and several others where supersedure occurred but no data were kept, the writer noted a very marked effect on the surplus returns.

We usually have two flows sufficient to result in storage of surplus in this locality, ‘he first from white clover, sweet clover, etc., and the second from heartsease, Spanish needle and fall flowers.

Colonies superseding in 1918 accomplished the switch of queens during the first flow, but stored no surplus until fall flow.

One of the two colonies superseding in 1919 stored about one-half of what I anticipated during the fall flow, while the other colony stored nothing at all during the same period. Both of these colonies did well on first flow, in fact, judged by returns on that flow, I expected colony number 8 to be my best one. In each of these cases supersedure took place between the two flows.

In all cases a comparison with other colonies revealed a very decided lack of sealed brood.

From this fact the writer concludes that supersedure is not ordinarily resorted to by the colony until the old queen very materially slackens her activities.

Two of four queens superseded in 1919 were introduced in 1918 as untested queens, having been secured from a prominent breeder.

These observations lead me to believe that if the apiarist can anticipate supersedure and replace queens before they show any decided falling off in productivity he will profit thereby to a much greater extent than the value of the time and attention required.

Muscatine, Iowa.

## Granulated Honey

By A. F. Bonney

The time was when I did not enthuse over a campaign of national advertising of honey, but I have had a change of heart. All large bodies move slowly, and that is why my mind did not act at once, which, I think, will look logical to the average beekeeper, yclept honey producer.

An editorial on page 372 of the American Bee Journal was the lever which pried me loose from my false idols, and I am now very much in favor of advertising, as strongly and extensively as possible, to rid the mind of the honey-using public of the superstition that granulated honey is something to shy at; that it is, possibly, some mysterious mess which is intended to deceive and defraud.

I commenced this in my own field early in 1919, by calling attention strongly and especially that granulated honey was in every way just as good and pure as the liquid sort, and while I sold nearly 5,000 pounds—a big crop for an invalid, and an old one at that—I had but one complaint, and am not certain that that was on account of the honey being granulated. Receiving the complaint, I asked for a sample, promising to refund the price and pay all transportation charges if the complaint was just, but heard nothing more about it. I surmised that the honey was granulated, as that was the only thing which could be a cause of complaint.

Any advertisement about granulated honey that might do any good would be far too long for a sticker of any kind, but still we must have something which may be distributed liberally, and I wish to suggest that someone get out a proper ad which may be sold at a few cents per hundred to honey producers, and by them enclosed in each and every letter they write. In this way millions might ultimately be distributed in the world, with the usual result of intelligent advertising.

I do not think I am competent to get up such an ad for granulated honey, but I can at any rate give a suggestion, as follows:

HONEY

Liquid and Granulated

All honey on the market today is probably pure, on account of the pure food laws, but there seems to be an idea in the minds of some that honey that has become solid, or granulated, as honey producers say, is not just what it should be.

This idea is erroneous, for **all** pure honey will candy, or granulate, in time, and the colder the place it is kept the sooner the change will come.

This does not injure the honey at all, and if it is set in hot water for a time it will become liquid again, and the delicate flavor will not be lost, **but it must not be boiled.**

Many consumers of honey are now calling for the granulated sweet, and consume it in that form, and they also mix it half and half with butter, which not only saves butter, but makes a delicious spread for bread and cakes.

EAT GRANULATED HONEY

The thoughtful honey producer will see that this may not only be sent out as above mentioned, but that one of the slips may be pasted on every shipment of honey. If this were done it would be but a short time before the demand for granulated honey would be firmly established.

Such a slip need not be more than 4½x2½ inches in size, with a half-inch margin of white, and if printed by the millions need not cost more than a fraction of a cent each, possibly they might be sold for 50 or 75 cents a thousand. I will take 10,000 at $1 the thousand to begin with.

There are advantages in granulated honey that must appeal to every beekeeper. We would be enabled to extract, run the honey into cans, let it granulate, and sell any time in the next ten years; we could use for shipping the paraffined paper containers; and, moreover, much handling of the crop would be avoided.

Iowa.

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## Book Reviews

"Outapiaries and their Management," the new book by M. G. Dadant, being the first of its kind to appear, gives token that beekeeping is going more into the hands of specialists, and that outapiaries are on the increase.

Every year the number is larger of those whose colonies become too great in number to be kept profitably in one place, and when a man decides to establish a second apiary in a new place he is confronted with questions that have not before troubled him—questions that he would like to have answered by some one who has been through the mill. For such persons this book is designed, and meets the case nicely. The bee-lover will enjoy its clear instruction, and the book-lover will enjoy its clear typography.

The beekeeper of the present day may congratulate himself that as a new need arises a new book arises to meet the need. C. C. MILLER.

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Many a beekeeper whose printed information concerning honey plants has been limited to a few pages in some book upon beekeeping in general, has eagerly longed for something fuller on the subject. Now no less an authority than Frank C. Pellett has given us "American Honey Plants," a book of 300 large pages entirely devoted to the subject. To be sure, many of these pages are taken up with pictures of honey plants, but this makes the book all the more valuable. However familiar the reader may become with the reading matter, he will always come back to dwell fondly upon the illustrations, because of their real beauty.

C. C. MILLER.

## The Children's Life of the Bee

Maurice Maeterlinck's book, "Life of the Bee," has recently been selected and arranged by American authors and republished by Dodd, Mead & Company under the title "The Children's Life of the Bee." The book naturally retains all of the fine artistic writings of the original author and has been so arranged as to make it of interest to the child who is desirous of learning the history of the bee.

Even in its present form the book could hardly be called a primer in beekeeping, since much of the artistic value of Maeterlinck's original work would be lost if it were to be transformed into a child's book entirely.

The book, however, has sufficient value to be recommended. It is also illustrated with several excellent colored plates.

The price of the book is $2, and it may be purchased of the publishers, Dodd, Mead & Company, of New York City, or from the American Bee Journal.

## Wiring Frames

My method of wiring frames, while slow, and possibly not adapted to commercial honey production, will guarantee certainly maximum amount of worker comb with minimum stretching.

The frame is first wired in the regular way, and the sheet of foundation inserted, taking care to have the wires in the opposite side of the foundation from the V wedge. The wires are now imbedded in the foundation without inserting the V wedge.

Next, four wires, just as long as the frame is deep, are placed vertically in the frame equal distance apart, and fastened to the top bar, together with the foundation, by the V wedge. Then these four wires are imbedded in the foundation, making a perfect job, with wires running both ways and no sagging.

OSCAR McFARLAND,
Louisiana, Mo.

## Bees Send Owner to College

Bees and honey are helping to pay the way of several students through the Minnesota College of Agriculture. Edmund M. Daggit, a junior, proprietor of Bonnie Oaks Apiaries, near Chippewa Falls, Wis., has 110 colonies of bees which were built up from 56 colonies last summer. In addition to the increase in bees he received, he says, about 4,500 pounds of honey, his net profits for the year 1919 from these two sources being between $1,100 and $1,200. He also sold 2,400 pounds of honey which he carried over from the year before.

The year 1914 is likely always to be a significant year in the chronology of Mr. Daggit. Early that year he bought his first colonies of bees. Then in the fall he started in the central School of Agriculture at University Farm, his bees by that time having increased to five colonies. So it will be seen that he got into business and into school about the same time.

"I took all of the bee courses," he says, "that I could get at University Farm under Professors Jager and France. I increased my colonies to 15 in 1915 and sold $50 worth of honey that year. In 1916 I had 39 colonies and $150 worth of honey. I thought I was going strong in 1917 with 80 colonies and with $350 worth of honey until winter came on and I lost many of the bees during the cold winter, but 1918 found me with 72 colonies and a honey flow which brought me $800. A few of the colonies which I picked up to replace my losses were bought from my neighbors during the swarming season.

"I intend to increase to 800 colonies this year, in three yards. I produce extracted honey almost exclusively because more colonies can be managed and more conveniently under this system."

## Bees and Spray Poison

Hearing reports of loss of bees from spraying in the Yakima Valley, I am wondering whether there is not some other cause. Before fruit trees blossomed last year I sold three colonies to Dufur Orchard Company, which owns 4,000 acres of bearing apple trees. They practice clean cultivation. There was no water within two miles from where the bees were placed in the middle of that big orchard. Lime-sulphur spray was being applied all around me when I placed the bees in the orchard. I put two empty supers on each hive and left two more for use if needed. When I went back in September the bees had the two supers filled with honey and were in fine condition, with hive-bodies full of brood. There was no apparent effect of spraying there.

Some complain of poison from the cover crop of alfalfa. Last summer I took care of M. A. Moody's bees, located in an orchard where alfalfa is raised as a cover crop and where the trees are sprayed with lime-sulphur and with arsenate of lead. In the fall I removed 600 pounds of honey from a few colonies. Some had filled five supers. There was no sign of poisoning.

I have an apiary of 100 colonies among the orchards and rented out 76 colonies in orchards where they are continually spraying. I have been keeping bees for thirty years and have not seen any bad effect from spraying. I would like to hear from other localities on this question of bees poisoned by spray.

Oregon. JOHN PASHEK.

## Feeders and Feeding

I am only a beginner with 26 colonies, but the following experiment in feeding may be of interest to those of wider experience. I tried feeding in an old syrup evaporator, diluted honey placed where all the bees could get it. This resulted in the loss of a good many bees, so I tried another plan. Empty combs are used as containers and are filled by holding the top bar at an angle of about 45 degrees. The diluted honey is poured into the cells along the upper edge, gradually moving along until one side is filled, and then the comb is turned over. This can be done without waste, as what runs off can be caught in the next one. When the comb is filled it is placed in the hive of the colony to be fed. It should be given when the bees are quiet, to avoid robbing. If anyone knows a simpler, cheaper or handier method, I would like to hear of it.

EZRA WIGGINS,
Jackson, Ala.

### A Texas Association

The beekeepers of Matagorda and Wharton Counties, Texas, met on March 25, at Bay City, and, with the help of C. S. Rude, Assistant Entomologist, organized a local association of beekeepers. W. H. Moses is President, R. C. King Vice President, and J. D. Yancey Secretary. For information, write to W. H. Moses, Lane City, Texas.

### Boys Want Apiary Positions

Prof. B. F. Kindig, of the Michigan Agricultural College, writes us that several graduates of the course in beekeeping at East Lansing are looking for positions either in inspection work or with commercial beekeepers. Those interested will do well to communicate with Professor Kindig.

### Wants Black Bees

At the Kansas State Agricultural College a series of colored plates are being made showing the different races of bees. In order that the plates be true to life it is necessary to have pure stock from which to make the pictures. Just now Dr. J. H. Merrill is looking for specimens of the German, or black bee. Queens, drones and workers are wanted. While black bees are common in most localities, there are few places where they are to be found unmixed with other races. Anyone who can supply the pure black bees should write to Dr. Merrill at the college at Manhattan.

### Another New York Meeting

Chemung Co., New York beekeepers met at Farm Bureau Hall on March 6, with President A. J. Tobey presiding. Loss of bees from spray poison, importance of ample stores for brood-rearing and the Ithaca short course were among the subjects discussed. Prices on supplies were quoted by various firms.

### From Wisconsin

The beekeepers' Chautauqua held in Wisconsin last year was so successful that Professor Wilson announces a similar one again this year, to be held August 15 to 21, at Madison.

The beekeepers of that State have a department in "Wisconsin Horticulture," which is edited by Professor Wilson, bringing to them the latest news of Wisconsin beekeeping.

### Plenty of Ventilation

Here is a story that I know to be true. A man by the name of Peterson kept quite a number of bees in box hives, probably 40 colonies. They were close to the house and were very cross. In the winter, Mrs. Peterson took an ax with the idea of destroying a colony of the cross bees near the house. She split off one corner of the hive, about 2 inches wide each way. But the bees frightened her away. These bees wintered finely, in spite of the ventilation.

The farm papers ought to instruct their readers on when to spray the fruit trees. I think that is where I lose the largest number.

O. A. REES,
Pennsylvania.

### Maryland State Association

The third night meeting of the Maryland State Beekeepers' Association of the winter series was held at the Hotel Rennert on the night of the 27th, with Mr. L. R. Watson as the principal speaker. His address was on the adaptation of practice to the behavior of the insect.

Following this paper an essay on "The best System of Spring Management to Secure Comb Honey and Prevent Swarming" was read by each of the following members, who were competing for a prize offered by the Association. Mr. George Harrison, Jr., was winner of the first prize, with Mr. T. G. Lytle recorded honorable mention. Approximately 50 members were present.

ERNEST N. CORY,
Secretary-Treasurer.

# DR. MILLER'S ANSWERS

Answered by the Editor during the illness of Dr. Miller.

**If an addressed stamped envelope is enclosed with the questions asked, a copy of the reply to be published will be mailed to the enquirer. Some questions require too lengthy answers to be available in this department. In such case the enquirer will be referred to the proper authorities or treatises. In many cases if the enquirer will read the questions of the previous numbers he will find exactly what he seeks.**

### Raising Queens

1. I would like to buy one or two Italian queens to raise my own queens, but as I have only blacks. I would like to know whether the queens raised would be purely mated? I would not want to buy queens for all my hives, as it would cost too much; so would like to buy a few only to use as breeding queens. How would it be to have those colonies with the Italian queens some distance from the others?

2. I have a supply of goldenrod honey and some don't care to buy it, and I don't know what to do with it. What do the people who have bad tasting honey do with it?

LOUISIANA.

Answers.—1. You would have to keep those bees at least 4 miles from the others and make sure that there were no other bees in the vicinity to insure their pure mating. Better take all the drone comb out of your black colonies and replace it with worker comb. Then put one good, big drone comb in the center of one of the Italian colonies, so as to raise plenty of Italian drones. You will probably still have some mismatings. But as the drones from your mismated queens will be pure Italian, owing to parthenogenesis, the next generation will be more likely to have pure matings. It is difficult at first to obtain pure bees when there are blacks all around. But we have all had to go through this difficulty, and yet there are many neighborhoods now where the Italians are in great majority.

2. I thought goldenrod honey was a very saleable article. You might blend it with some other grades, by heating both slightly. Or you may sell it to dealers in honey. Usually this honey is in good demand.

### Moving Bees

I have purchased 3 hives of Italians. I don't know how to get them home, as they are just as busy now as they were last summer. They are carrying pollen all the time, and I can't imagine where they get it this time of the year. I only have to move them one mile, but do not know how to go about it, as it is not cold enough any day to confine them to the hive. Please let me know how to move them without leaving too many behind.

TEXAS.

Answer.—Make frames of 4 slats 1x2 inches, which you will nail together so as to fit exactly over the top of one of your hives. Tack a sheet of wire cloth over each of these frames and nail them on top of the hive bodies, after having removed the cover and honey board, if there is one. You should have the wire cloth at the upper edge, so as to leave a space of an inch between the frames and the wire netting. Nail the bottom boards fast. Put the covers back on for the rest of the day.

The following evening, after the bees have ceased to fly, close the colonies by nailing a slat in front of the entrance. No screen there. Give air above, enough to keep them from smothering.

The next morning, get up before daylight and load your bees on a buggy, or a wagon or a truck, just as early as you can see to do it, and haul them to their destination. You should be able to get them there by sun up. Cover up the screens and release the bees at the entrance, using a smoker to frighten them thoroughly. Place a slanting board in front of the entrance, so they may see that their surroundings are changed as soon as they take flight. You will lose but few in this way. You may remove the screens at leisure.

If the weather is very cool they may be hauled at any time after being confined. We surmise that your colonies are strong and the weather warm.

### Honey—Ventilation—Uniting

1. To keep extracted honey from granulating I understand one should heat it to 160 degrees or less before putting up and sealing? Is there any danger of a thermometer breaking when dipping into honey?

2. When you want ten frames of foundation filled out, should you put it above a strong colony, or below, to get it done quickest?

3 When sending off for a breeding queen and a pound of bees what date would be best to receive it?

4.If queen and bees are gotten from Tennessee, do the climatic conditions of Washington and Tennessee make any difference as to the working of the bees?

5. When supers are "staggered" one inch back first super, ahead on second, etc, for ventilation, should wire cloth be put over this space. I should think the vent space would cause robbing.

6. When uniting a swarm of bees back to its colony I have read one can just dump the bees in front of the hive and let them go in. But isn't there any danger of them killing the queen in the old hive in spite of the fact that you discarded the queen from the swarm before uniting, or won't the virgin queen be emerged from the cell yet if I unite them the next day?

WASHINGTON.

Answers.—1. The thermometer does not usually break, but to be entirely safe you might insert it in the honey when you begin heating. Better stir the honey from time to time.

2. The quickest way to have the foundation worked is to mix it among the combs of a strong colony. Usually they will work it if it is below the hive body.

3. This depends upon your honey crop. Better have them too early than too late, say a month before the crop begins.

4. As a rule, when bees are shipped from a country farther south, they are encouraged to work and have more activity.

5. Don't "stagger" the supers when there is the least danger of robbing. It is not necessary then. Neither should you do it unless the colony is very strong. It may be easily overdone.

6. There is very little danger of the queen being killed when you return the swarm to the same colony, unless you wait too long. Two days should be the limit.

### Queen

1. How am I to determine whether the colony has a queen?

2. If the swarm seems weak, would you advise buying a pound or two of bees, or a new queen and bees?

3.. What is meant by nuclei?

4. Can I buy a queen and a few pounds of bees and put them in a new hive with foundation, same as introducing a new swarm?

ILLINOIS.

Answers.—1. From the outside, the only way to determine whether a colony has a queen is to watch whether the bee are carrying in pollen freely. If they are it is very probable the colony has a queen. If you open the hive and examine the combs, you should find brood in the combs. That is good evidence.

2. Buying bees by the pound does not seem advisable unless you buy a queen with them. Then it is best to build up a colony from those bees. If you buy bees without a queen, they will probably not do very well. Then many of them may be killed by introducing them to a queenright colony.

3. A *nucleus*, plural *nuclei*, is a diminutive colony. The word nucleus is from the Latin and means a pod, a core.

4. Yes, you can build a colony from a pound or two of bees and a queen. But you must be sure that they are well supplied with food, if there is no honey in the field.

### Wintering—Settling a Swarm

1. How many pounds does one brood frame of honey weigh?

2. Will a colony of bees have enough honey for winter if the brood chamber is full of honey?

3. What should be done to settle down the bees on a branch of tree when a swarm issues in air?

NEBRASKA.

Answers.—1. That depends on the thickness of it and on how full it is. When exceedingly well filled and thick, it may weigh 8 pounds. It may be as light as 5 pounds.

2. It certainly does not need to be full of honey from top to bottom to have enough. You rarely have brood frames entirely filled with honey.

3.A very good way is to fasten a dry comb to a pole and place it in reach of the swarm. But in some cases, no matter what you do, they will settle where you least expect them to.

### Deep Brood-nest Vs. Shallow Supers

Do you think it would be advisable to change from the regular deep brood-nest (L. size), to the divisible brood-nest (shallow supers)? I am bothered in getting bees to go up into the supers when I have no bait combs to put in them, and I think a deep super is too much to give them at one time. If I take a comb from the deep brood-nest and put it in the shallow supers they build a comb on the bottom of it and fill it with honey and brood, and I can't return it to the brood-nest without destroying this comb.
TEXAS.

ANSWER.—Your inquiry reads as if you took a comb from the brood-nest and placed it in the upper story without placing another frame in the lower story. Of course the bees will build down under it, to fill the space in the brood-nest. You should replace that frame with another containing comb foundation, or at least starters.

Very few people like the shallow brood-nest, the average Langstroth hive being shallow enough. Yet, a very extensive beekeeper of Texas, Mr. Louis Scholl, uses these shallow stories. We prefer a deep brood-nest and a shallow super. But in any case, it is well to have either combs or foundation to use in your upper stories.

### Wire in Foundation

I have been very much interested in the different systems of wiring given in the February number of the American Bee Journal and Gleanings. I bought some frames once that were wired from corner to corner with one wire lengthwise, close to the top, but they were the most miserable things I ever had anything to do with. The foundation would buckle in the center above where the wires cross, as there is very little give to tight wires stretched in that way. I want to get rid of that by bringing the cross wires closer to the top. I have been thinking that it would be practical to make foundation with fine wires put in vertically, say 1 or 2 inches apart, fine enough so they could be rolled right in as the foundation is made; perhaps fine copper wire would be best. This would help to keep the foundation from stretching. With foundation with these wires in, it would be only necessary for the beekeeper to wire his frames horizontally.
COLORADO.

ANSWER.—Your suggestion of wires put in vertically was put in practice by the Van Deusen people in their flat-bottom foundation for a long time. The proof that this was not very practical is in the fact that after selling it for years the Van Deusen people have stopped manufacturing.

### Queen Regulating Sex

When I see thousands of worker bees emerging from a frame and not a single drone amongst them, and again see hundreds of drones hatching from a space evidently allotted to them, with no workers, and I know that one queen lays the eggs in each batch, I wonder how does she regulate the laying to keep the sexes separate. Can you tell me?
ONTARIO.

ANSWER.—It has been advanced that the shape of the cell has something to do with the fertilizing of the egg, as it is laid; since we know that the eggs that batch as drones are unfertilized, and only the eggs that hatch as females (workers or queens) are fertilized as they pass by the spermatheca. But a queen sometimes lays eggs in queen cells. Then how does she know that these eggs must be fertilized to bring the right sex? I will have to return the question to you, for I don't know.

### Bees Carrying Out Brood

I have one stand of bees that is acting very peculiar; they are carrying out worker brood that is still in the grub state, but perfect; they have about 35 or 40 pounds of honey and it is *not* because they are starving, but they are weak. The most of them froze out this winter. The cause was water or frost got into the brood-nest, but not any more than the rest, and I don't understand the reason. My question is, why do bees carry out brood in February when they have plenty of stores?
INDIANA.

ANSWER.—I would judge that the queen is very prolific and laid eggs to the edge of the cluster in mild days. Then this brood got chilled when a cold night came.

### Miscellaneous

1. How many revolutions in a minute does the cage of an extractor have to run to extract the honey from comb when all things are normal?

2. Does the law compel bees shipped from Michigan to Wisconsin to be inspected?

3. Will you give me full details of the construction of your new 2-inch space bottom-board?

4. Would it hinder my bees to go one-half mile to a basswood grove, or should I place them in the grove?
WISCONSIN.

ANSWERS.—1. One hundred and fifty revolutions are sufficient when the honey is not cold or too thick. But extractors usually revolve at greater speed. In many cases they revolve faster than necessary.

2. We are not quite sure of the law in this respect. Write to S. B. Fracker, State Entomologist, Madison, Wis., for positive information.

3. The bottom-board is made of 6 pieces of ⅞-inch stuff; 2 pieces 22½x2, one piece 12⅛x 2, and 3 pieces 7½x13⅞. The 2-inch pieces are for sides and back end, the others form the bottom. It makes a box 2 inches deep, open at one end. A bottom rack is used in the summer to prevent the bees from building down; it is taken away for wintering. This is made of 2 pieces 18x1¾, and 21 pieces 10½x ⅜x⅜. The latter are nailed, ladder-fashion, ½ inch apart on the ¾-inch sides of the two large pieces and are allowed to project at the ends about an inch. This bottom-board is for an 8-frame hive. Change the sizes to fit a larger one.

4. That distance is just about right. They would go several miles to the basswood, but it is better inside of a mile.

### Transferring

I have been trying for some months to purchase bees near home, and all I have been able to get is four swarms in nail kegs. I have never handled bees, only to help hive a couple of swarms. Please tell me how to transfer these bees into modern hives without losing them.
WASHINGTON.

ANSWER.—The proper time to transfer bees is during fruit bloom, or at any time when they are harvesting honey and the hive is still light in weight.

Drive the bees from the box, or gum, or keg, into any kind of a box by drumming them. Set the box containing the bees on the stand. Take the hive containing the combs into a house and cut the combs containing brood and fasten them in frames. To fasten them in, we use wires of the width or height of the frames, bent at the end about half an inch, so as to drive the bent end into the edge of the frame. Put those combs in a hive, and enough dry combs or comb foundation to fill it and shake the swarm in front of it, on the old stand. In a week you can remove the wires, as the bees will have fastened the combs in place.

### Feeding

I bought a barrel of New Orleans brown sugar to feed my bees this April and May. Do you think it will make good feed, and would two parts water to one of sugar be all right for spring feeding? The sugar is rather strong tasting.
MISSOURI.

ANSWER.—The brown sugar will probably do for spring feed, though I doubt whether there is any advantage in it in the cheapness over the white granulated sugar. It would probably not be healthy for winter.

Two parts water for one of sugar will dilute it too much. For winter we use two parts sugar for one of water. The spring feed may be diluted much more than the winter feed, but one part of sugar or one and a half parts to one of water will be plenty liquid enough. Warm it up before giving it to them. It will be better.

Some beekeepers in Northern Michigan dilute sugar very thin and feed it to their bees outside. This will do where there are no bees belonging to other people in the neighborhood. When sugar is very much diluted, it may be fed outside without causing any other excitement than a light honey crop would do.

### Requeen—Full Sheets

1. I have two colonies of bees, A and B. Colony A has proved to be the strongest and best honey gatherers. Now I want to requeen colony B with a queen or queen-cell from A. Will you please tell me how to do this?

2. I read in the American Bee Journal that full sheets of foundation should never be given to a new swarm. How, then, shall a new swarm be given full sheets of foundation?
NEBRASKA.

ANSWERS.—1. Kill the queen of B, take all its brood away and give it one or two, or perhaps three combs of brood from A. Make sure that there is plenty of very young brood, larvæ not over 3 days old. B will then rear a queen from this brood. The number of combs of brood to be given B is according to its strength. You must be sure that they have more than enough bees to cover the brood well, and plenty of honey. In a time of dearth it is well to feed the colony that is rearing queens. This must not be done until you are sure there are drones to fertilize the young queen. If it is done when the colonies are strong, it will be well to inspect your queen-rearing colony in the morning of the tenth day after making it queenless and destroy or take away all but one queen-cell, unless you want them to swarm, which is not desirable under those circumstances.

2. The statement made by M. G. Dadant was not sufficiently explicit. It will not do in hot weather, to give *all foundation* in full sheets to a swarm, as the weight of bees is likely to break down some of it. But if you give them two or three partly built combs they will cluster on those mainly, and the balance may be full sheets of foundation. If you have no built combs on hand, you may take one or more from the colony that swarmed, exchanging them for full sheets of foundation.

### Wintering—Protecting Neighbors

1. I have five colonies of bees and winter them outside. One of these is very uneasy. They come out on cold days and fly when no sun is shining. Many fall on the snow and die. I darkened the entrance, but that did not stop them.

2. I live in town and have close neighbors. Sometimes my bees bother them. Do you think it would help any to plant grapes around my bees. A board fence would make it rather warm in summer and does not look good in town.
IOWA.

ANSWERS.—1. They may be suffering from bad honey that clogs their intestines unduly. In that case you must see more or less of their discharges around the entrance. When they are in very bad shape they discharge their feces upon one another and the colony soon dies. On the other hand, the colony may be strong enough that the least disturbance causes them to fly, especially if the weather is not very cold. In that case they will carry dead bees out trying to clean their bottom-board when they ought to be quiet. In the first case they will probably die out before warm weather. In the second case the colony must be very strong. It is impossible to say which is the case, on the description you give.

2. Yes, planting grape vines is a very good thing. But in the mean time you will have more or less trouble with the neighbors, who can hardly be blamed for feeling irritated if the bees are cross. We suggest erecting a screen fence between the apiary and the neighbor's lot. I have seen in Peoria an apiary close to a neighbor's back door, screened with 1-inch mesh chicken netting to the height of about 10 feet. The bees do not like to fly through this netting and so take a different direction for their flight. That makes all the difference. Try it and let us know how it works. It may not work in all cases alike. Don't fail to plant your grape vines anyhow.

## Two Queens in One Hive—Introducing—Shipping

1. Can you have two queens in a two-story brood chamber during the honey season by the aid of an excluder between the two stories? I should think a laying queen above and a laying queen below would build colonies very strong and gather a good surplus.

2. For increasing two hives from one (three in all) by aid of nuclei and introducing queens, what do you think of the following: Put two queens in cages on or between frames of hive to make the two nuclei from, and leave them there with plenty of honey to eat for three days so that they will acquire hive odor. Then take six frames of adhering bees and put in two different hives, introducing one of these caged queens to each three frames, by taking cork out of one end and putting in a little plug of foundation, and placing amongst the three frames?

3. If you shipped about ten colonies from, say Washington to Oregon, Idaho or Montana, what would be the best and cheapest way of shipping them?

4. Will a pound of bees and a queen received in March make any surplus before end of the season?

5. What is one of the safest ways of introducing a queen to two-frame nucleus made by dividing?

6. Could one have a two-story brood chamber and give the queen more room by raising the brood from the first story as she lays it, to the second, replacing first story with empty combs?

WASHINGTON.

Answers.—1. Yes, but in practice you may find it unprofitable. Try it.

2. It will work all right. A chunk of honey will be still better than a piece of foundation as stopper of the cages.

3. Freight would be the cheapest. But it is doubtful if this mode is advisable on less than carload lots. Railroad companies charge enormous rates anyhow. Probably it will be best to ship by express.

4. That depends on so many circumstances that it would be impossible to reply knowingly. Some people have succeeded in getting a very fair crop from bees by the pound. But it would probably be best to get two-pound lots.

5. Introducing queens by the method recommended by all shippers is the safest, unless you introduce the queen to bees that are just hatching. Keep the queen caged in the hive 48 hours, then release her by letting the bees eat to her through the candy or by replacing the stopper of the cage with a little honey cappings.

6. Yes, that is a very good way, if you do not mind the work.

## Swarming—Young Bees Dead

1. I have a colony that I've had on hand for 15 years. They are always in first-class condition, and if any honey is gathered I can always "bank" on that colony having a good portion of it. During that time they have never swarmed or prepared for swarming. I have transferred them two or three times in order to give them new comb and hive. Why haven't they swarmed?

2. During the last two weeks of August most all of my colonies were carrying out young bees, larvæ a week old to winged insects just ready to come out for work. I don't think it's because they were dead, for the winged ones were alive, some being old enough to crawl about for awhile.

3. Along the middle of June I had a very nice swarm come out and settle on a cedar tree. After they were nearly all settled I prepared to hive them, but noticed they were all at work like a bunch of worms, and seemed to be very dissatisfied, so I sprayed them with water to quiet them, which did the trick O. K. Then I put them into a hive and they began killing each other, and by night there was nearly a quart measure full of dead bees in front of the hive. The bees in the parent hive did the same thing, and by night the ground in front of their hive was covered with dead bees. This swarm came out about 4 o'clock p. m. They went to work next day and have the hive about filled with honey. Why the killing?

4. I had two good swarms to issue from one hive this season. Later I noticed the parent hive wasn't working, so I opened it and found it vacant; no bees there, yet there was some honey and brood, and bee eggs and capped brood, all alive save some few of the younger larvæ. Now that "gets my goat," but maybe you can enlighten me.

MISSOURI.

Answers.—1. It may be that size of hive, amount of shade and other circumstances, combined to make the bees satisfied without swarming. But I suspect there's something in the blood of those bees that makes them approach non-swarmers. If I were you I'd be thankful to have them and would breed from them.

2. Quite possibly they were casting out drones at the annual slaughter of drones.

3. Possibly another swarm attempted to unite with them. Swarms generally unite peaceably, but sometimes not, especially if one does not have a normal queen.

4. It is possible that after the issuing of the swarms the parent colony failed to have a laying queen; either having a drone-layer or no queen at all, but developing laying workers.

BEE SUPPLIES SERVICE AND QUALITY BEE SUPPLIES

Order your supplies early, so as to have everything ready for the honey flow, and save money by taking advantage of the early order cash discount. Send for our catalog—better still, send us a list of your supplies and we will be pleased to quote you.

2146 Central Ave. C. H. W. WEBER & CO. CINCINNATI, O.

The Diamond Match Co.
(APIARY DEPT.)
MANUFACTURERS OF
Beekeepers' Supplies
CHICO, CAL., U. S. A.

Dadant's incomparable Foundation is always kept in stock. Western Beekeepers can be supplied advantageously.

BEEKEEPERS, wherever they may be located, before deciding where to obtain supplies, should write to The Diamond Match Co. for prices, and for their Beekeepers' Supply Catalogue.

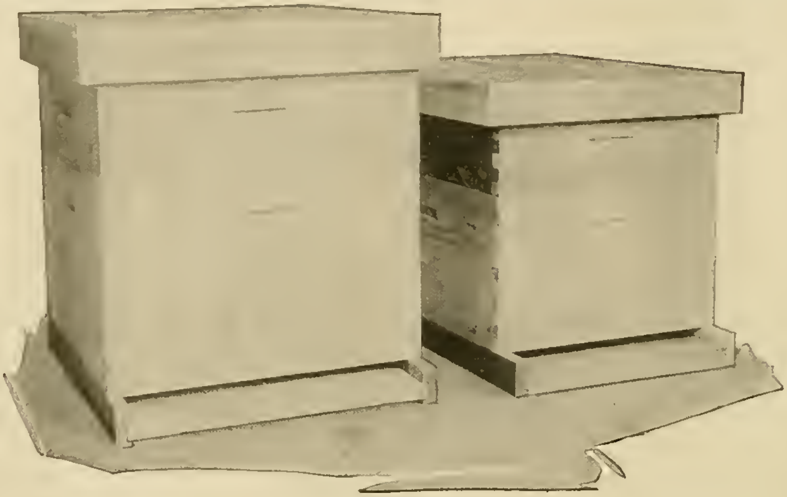
This Company are the largest manufacturers in the world who make Bee Supplies. They own their own timber lands, mills and factories, and supply goods direct from the tree to the beekeeper.

Full advantage of this low cost of production is given to the purchaser.

The Apiary Department (which is in charge of experienced supply men, who are also practical beekeepers) maintains a constant excellence of product and offers unsurpassed service.

The Diamond Match Co.
Apiary Department CHICO, CAL., U. S. A.

# MODIFIED DADANT HIVE



The Modified Dadant Hive has 40 per cent larger Brood Comb Area than the Ten-Frame Langstroth Hive

A glance at this illustration shows you why the Modified Dadant Hive should be in your apiary. See the large size compared with the ten-frame "Standard." Features embodied in this hive are: 1, a deep frame; 2, a large brood chamber in one story; 3, ample ventilation by wide frame spacing; 4, excellence in wintering; 5, swarming easily controlled

## MODIFIED DADANT HIVE FEATURES

1. Eleven frames, Langstroth length, Quinby depth.
2. Frames end spaced 1½ inches for swarm control.
3. Extracting frames 6¼ inches deep.
4. Dovetailed body, regular reversible bottom and metal roof cover with inner cover.
5. Langstroth "Standard" equipment easily used with it.

**MADE BY G. B. LEWIS COMPANY**
**SOLD BY DISTRIBUTORS OF LEWIS "BEEWARE"**

*For free booklet write either to*

**G. B. LEWIS COMPANY, Watertown, Wis.**
**DADANT & SONS, Hamilton, Ill.**

## Fertilizing Drone Eggs

If anyone should be repeating my experiments in drone egg fertilization (see American Bee Journal, December, 1919, p. 415), I will add that unless operations are carried out at a high temperature, the result will be failure, seeing that natural fertilization occurs at the internal heat of the queen's body. Also, in my latest investigations the drone has been squeezed onto a warm glass plate, previous experiments showing that the extraneous matter of the drone often prevented the sperm finding its way through the micropylar aperture of the egg. The squeezing of the drone requires some practice before the spermatophore is ejected. It is applied to the large end of the egg with a fine hair pencil.

Regarding your interesting articles in the February American Bee Journal, on foundation stretching and wiring, trouble is often experienced in getting the wires taut, without cutting into the soft wood side bars. A useful preventative is to have small tin discs. These are threaded onto the wire, when wiring up the frame, and then pressed into the wood. These handy helps are cheaply punched out by the thousand.

GILBERT BARRATT.

## Honey Plants of Love County Oklahoma

First we have the elm and blackhaw trees, which furnish both honey and pollen for early brood-rearing. These trees bloom in February and March. The fruit trees bloom from the 15th of March to the 1st of April. The blackberry and wild dewberry follow the fruit trees. Then we have the persimmon trees, which furnish honey. For surplus honey horsemint, which blooms from May 1 until June 30, yields amber honey of excellent flavor and heavy body. The cotton plant, hundreds of acres of which is grown in this county, furnishes water-white honey, of superior flavor and extra heavy body. This flow lasts from July 20 until September 30. We have a flow from sunflowers. This flow comes between the horse-mint and cotton bloom flow and lasts until October 1. This honey is amber, and not of very good flavor.

We have a fall flow from broom weeds, which give us an abundance of winter stores. This honey is not salable, but is good for winter stores. We do not have to feed in the fall unless it is a dry year.

EUGENE HOLLOWAY.

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## CLASSIFIED DEPARTMENT.

Advertisements in this department will be inserted for five cents per word, with no discounts. No classified advertisements accepted for less than 35 cents. Count each initial or number as one word.

Copy for this department must reach us not later than the 20th of the month preceding date of issue. If intended for classified department it should be so stated when advertisement is sent.

### BEES AND QUEENS

See Atwater's classified honey adv't.

QUEENS BY RETURN MAIL—Tested Italian queens, $2.50 each. Untested queens, ready May 1, $1.25, $13.50 per doz. No disease and all queens guaranteed to be the best.
J. W. K Shaw, Loreauville, La.

FOR SALE Hardy Italian queens, $1 each
W. G. Lauver, Middletown, Pa.

FOR SALE—My famous three-banded Italian queens, $1.25 each, six for $7, from June 1 to November. J. W. Romberger, Apiarist,
3113 Locust St., St. Joseph, Mo.

WANTED—To hear from beekeepers wanting queens from three-banded Italian stock which for the last 10 years made the largest average per colony of any bees in Indiana. All orders accepted to be filled after May 20. Untested queens, May and June, $2 each, 6 for $10.50.
Charles Kennard, Knightstown, Ind.

THE ITALIAN QUEENS OF WINDMERE are superior three-banded stock. Untested, $1.50 each; six for $8. Tested, $2 each. Select tested, $2.50 each. Virgins $1. Nuclei for sale
Prof. W. A. Matheny, Ohio University,
Athens, Ohio.

DAY-OLD QUEENS at practical prices. Superior improved Italian stock. Mailed in safety introducing cages. Safe arrival guaranteed to any part of the U. S. and Canada. Send for circular. Prices: 1, 75c; 10, $6; 100, $60. James McKee,Riverside, Calif.

QUEENS—Italian queens of excellent stock will be ready to mail June 1. Untested. $1.50 each; 6, $7.50; 12, $14.
J. D. Harrah, R. No. 1, Freewater, Ore.

FOR SALE—Hardy northern bred Italian queens, untested, $1.50 each; tested, $2.50 each. Bees, 1-lb., $2.50. Write for quantity prices. Early delivery.
Clifton Smith, Salesville, Ohio.

FOR SALE—Hardy northern bred Italian queens, untested, $2 each, 6 for $11, May 15 to July 15. Select tested, $3, after June 1.
Dr. C. E. Sheldon, Coeur D'Alene, Idaho.

FOR SALE—30 colonies bees in 10-frame 1-story hives, spaced 9 frames per hive. Will ship about June 1, when unpacked from their winter cases. F. J. Rettig, Wabash, Ind.

BOOKING ORDERS for June delivery. Pure 3-banded Italian queens, reared by the Doolittle method. Untested, each $1, 6 for $5.75; per dozen, $11. Tested, each, $2; six for $11; per dozen, $20.
H. N. Boley, Hillsboro, Ia.

FOR SALE—Bees; good hybrid stock from outyards in 2-lb. packages, with a tested queen from home yard, for $7; or with untested queen, $6. Two-frame nucleus Italian bees, $5; 3-frame nucleus, $6.75.
C. H. Cobb. Belleville, Ark.

FOR SALE—Italian queens that will give results; untested, $2; tested, $3; breeders, $10.
A. Beyer, Krotz Springs, La.

TRYING IS KNOWING—I can tell you a lot of facts about Victor's Italian queens. I can tell you that they have all the good qualities that queen breeders ever claimed for their queens. But what of that? You can't know until you try it for yourself. Mated, $1.25 each; six, $7; twelve, $13.50, from June 1 to October 1. Julius Victor, Martinsville, N. Y.

FOR SALE—Bees in Hoffman 10-frame hives.
Julius Gentz, Wabeno, Wis.

FOR SALE—2-8 and 8-10 frame hives of bees on full-sheet combs; all wired; no foulbrood. Leather Italians, $12 and $15.
F. W. Hemmings, Thomaston, Conn.

FOR SALE—Italian queens. Prices for untested, in June, $1.50 each, $8.25 for six, $16 for twelve; tested, $2.50 each from July 1 to October 1; untested, $1.25 each, $7 for six, $13.50 for twelve; tested, $2 each; Virgins, 75c each. Mismated queens will be replaced if returned in 30 days. Dead queens will be replaced if returned to me by return mail.
R. B. Grout, Jamaica, Vt.

FOR SALE—Italian queens at reduced prices for June and balance of summer.
Irish Brothers, Doctortown, Ga.

FOR SALE—Pure Italian queens. Select untested, 1, $1.50; 6, $7.50; 12, $13.50; 50, $55; 100 and over, each $1. Also packages and nuclei. Golden Star Apiaries, San Jose, Cal.

FOR SALE—I. F. Miller's strain Italian queen bees. Northern bred for business from my best superior breeders; gentle, roll honey in, hardy, winter well, not inclined to swarm, 3-banded. Queens a specialty; 26 years breeding experience. Satisfaction guaranteed. Safe arrival in U. S. and Canada. Untested, $1 40; 3, $3.75; 6, $7; 12, $13. select untested, $1.65; 3, $4.50; 6, $8.50; 12, $16.
I. F. Miller, Brookville, Pa., R. 2.

FOR SALE—Three-banded Italian queens, June 1 to October 1, untested $1.50, tested $2.50, select tested $3.50.
Wm. C. Young, Box 249, Des Plaines, Ill.

FOR SALE—Queens, nuclei, packages, colonies from our apiaries in Arkansas and Louisiana Write for prices now.
The Foster Honey & Mercantile Co.,
Boulder, Colo.

FOR SALE—Three-banded Italian queens, ready June 10. Untested only, 1, $1 50; 6, $8; doz., $15. Book orders now.
Ross B. Scott, Rt. No. 4, La Grange, Ind.

FOR SALE—200 2-frame nuclei ready for delivery from May 1 to 20, at $5.50 each, with young untested queen. Where tested queens are wanted, $6.50 each.
Cotton Belt Apiaries, Roxton,, Texas.

FOR SALE—Superior California Queens—Western beekeepers may now secure our famous Italian queens at the following prices: One untested, $1.25; fifty untested. $57.50; one hundred untested, $100. Orders filled in rotation; first deliveries March 1, 1920.
Edson Apiaries, Gridley, Calif.

FOR SALE—Leather colored Italian queens, tested, until June 1, $2.50; after, $2; untested. $1.25; $13 per dozen. Root's goods, Root's prices. A. W Yates,
15 Chapman St., Hartford, Conn.

ITALIAN QUEENS—Three-banded, select untested, guaranteed. Queen and drone mothers are chosen from colonies noted for honey production, hardiness, prolificness, gentleness, and perfect markings. Price $1.25 each; 12 or more, $1 each.
J. H. Haughey, Berrien Springs, Mich.

FOR SALE—Choice Iowa bred 3-banded untested Italian queens, after June 15, $1.75; July, $1.50; August and September, $1.25 each. J. R. Coon, Ames, Iowa.

FOR SALE—3-banded Italian queens from best honey-gathering strain obtainable; (no disease). Untested queens, $1.25 each; 6, $6.50; 12, $12. Select untested, $1.50 each; 6, $9; 12, $18. Tested, $2.50 each. Safe arrival and satisfaction guaranteed. Your orders filled promptly. W. T. Perdue & Sons,
R. No. 1, Fort Deposit, Ala.

FOR SALE—Highest grade 3-banded Italian queens, ready June 1. Queen and drone mothers are selected from stock of proven worth in hardiness, gentleness, honey production and disease-resisting qualities. Untested, each, $1.25; 6, $6.50; 12, $12; 50, $47.50; 100, $90. Your correspondence will receive prompt attention, and I guarantee satisfaction.
A. E. Crandall. Berlin, Conn.

BOOK YOUR ORDERS for QUEENS now—Goldens, $2; tested, $3; banded, $1.50; tested, $2.50; six or more 10 per cent less.
Clover Leaf Apiaries, Wahoo, Neb.

"QUALITY" THREE-BANDED ITALIANS from excellent stock; untested queens, 1, $1.50; 6 for $7.50; 12 for $13.50; 50 for $55; 100 for $100. N. J. James,
1185 Bird Ave., San Jose, Calif.

MOTT'S Northern Bred Italian Queens— I have breeding mothers place in the south for April and early May queens. Plans "How to Introduce Queen and Increase," 25c. If you want beauty with the best of summer and winter laying birds, try a setting of my Golden Campines.
E. E. Mott, Glenwood, Mich.

FOR SALE—2,000 pounds of bees in pound packages, early.
H. E. Graham, Gause, Texas.

FOR SALE—A. I. Root strain of resisting and honey-gathering, leather-colored Italian queens. Untested queens, $1.50 each, 25 or more $1.40. Tested, $2.50 each, 25 or more, $2.25. Select tested, $3. For larger amounts write. A. J. Pinard, Morgan Hill, Calif.

1920 PRICES on nuclei and queens, Miller strain. Queens, untested, $1.50 each, $15 per doz.; tested, $2.00 each, $22 per doz. One-frame nuclei, $3; two-frame, $5; three-frame $6.60, without queens, f. o. b. Mason, Miss. Five per cent discount in lots of 26 or more. We have never had any bee or brood disease here. Will have no queens except with nuclei, until June 1. Safe arrival and satisfaction guaranteed.
Geo. A. Hummer & Sons Prairie Point, Miss.

1920 PRICES for "She Suits Me" queens. Untested Italian queen, from May 15 to June 15, $1.50 each. After June 16, $1.30 each; $12.50 for ten; $1.10 each for 25 or more.
Allen Latham, Norwichtown, Conn.

FOR SALE—After April 15, our golden Italian queens, untested, one $1.50 or $15 per doz.; select untested, one, $1.75 or $18 per doz.; tested, $3 each. Safe arrival guaranteed.
Tillery Bros.,
R. 6, Georgiana, Ala.

FOR SALE—Goldens that are true to name. Select untested, one,$1.50; six, $7.50; 12, $13.50; 50, $65; 100, $100.
Garden City Apiaries, San Jose, Calif.

FOR SALE—Golden and three-band queens. Untested, April, May and June delivery, $1.25 each; $12.50 per doz. Satisfaction.
R. O. Cox, Rt. 4, Greenville, Ala.

BEES BY THE POUND, ALSO QUEENS—Booking orders now. Free circular gives prices, etc. See larger ad elsewhere.
Nueces County Apiaries, Calallen, Texas,
E. B. Ault, Prop.

BEES AND QUEENS from my New Jersey apiary.
J. H. M. Cook,
1Atf 84 Cortland St., New York City.

## HONEY AND BEESWAX

See Atwater's classified honey adv't.

FOR SALE—We have a limited amount of our crop white clover, extracted basswood honey, all packed in new 60-lb. cans, 2 to the case. Write for prices.
D. R. Townsend, Northstar, Mich.

FOR SALE—Clover and buckwheat honey in any style container (glass or tin). Let us quote you.
The Deroy Taylor Co.,
Newark, N. Y.

WANTED—White clover or light extracted honey. Send sample; state how honey is put up and lowest cash price delivered at Monroe; also buy beeswax.
E. B. Rosa, Monroe, Wis.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendering.
Fred W. Muth Co.,
204 Walnut St., Cincinnati, Ohio.

FOR SALE—24 cases buckwheat comb honey, No. 1 quality, $6 per case; 12 cases mixed, not all capped, $4 per case, 6 cases to carrier; clear clover extracted, 25c per pound; buckwheat and clover mixed, 20c, 2 60-pound cans to case.
H. G. Quirin, Bellevue, O.

HONEY, SUPPLY YOUR CUSTOMERS—Case of two 60-lb. cans finest alfalfa-clover honey, extra strong cases, $24, 5 or more cases at $21.60, all f. o. b. here. E. F. Atwater, Former Special Field Agent in Beekeeping, U. S. Dept. Agr., Meridian, Idaho.

WANTED—Comb and extracted honey.
The L. H. Snider Apiaries, Auburn, Ind.

## FOR SALE

See Atwater's classified honey adv't.

FOR SALE—Cedar or pine dovetailed hives; also full line of supplies, including Dadant's foundation. Write for catalog.
A. E. Burdick, Sunnyside, Wash.

FOR SALE—"Superior" Foundation (Weed process). Quality and service unexcelled.
Superior Honey Co., Ogden, Utah.

FOR SALE—About 50 colonies of bees, mostly Italians; also complete hives, supers, comb and extracted, and other used equipment. Bees and supplies are located near Lansing, Mich. Duplicate volumes A. B. J. and Gleanings also for sale or exchange.
F. Eric Millen,
O. A. C., Guelph, Ontario, Canada.

FOR SALE—Pure bred New Zealand rabbits and other kinds.
Iowa Rabbit Farm,
612 N. Cherry St., Creston, Ia.

FOR SALE—Orchard Hill Farm; fine for apiary, fruit, asparagus. Shore and city markets.
R. F. D. 1, Freehold, N. J.

FOR SALE—New Cowan rapid reversible extractor, $30.
Lorenzo Clark, Winona, Minn.

FOR SALE—Bee supply business, including equipped mill for the manufacture of bee hives; also a small warehouse and 80-colony apiary. This is a splendid opportunity for the right party. The business is well established and profitable, but owing to reasons which will be fully explained, I desire to retire. Don't answer this add unless you mean business and have or can command a few thousand dollars. Address, A. E. Burdick, Sunnyside, Wash.

## WANTED

See Atwater's classified honey adv't.

WANTED—Beeswax
The L. D. Caulk Co.,
Milford, Delaware.

WANTED—Beeswax. At present we pay 40 cents per pound in cash and 42 cents in trade for clean, yellow wax, delivered Denver.
The Colorado Honey Producers' Association,
Denver, Colo.

WANTED—Honey—50,000 lbs. bulk comb and extracted 1920 crop, produced and packed according to my instructions and specifications in containers furnished by me. Write today for instructions and contract blank.
W. A. Hunter, Terre Haute, Ind.

WANTED—Your old combs, cappings and slumgum to render into beeswax. We get enough more wax with our well equipped presses to pay for our work.
Dadant & Sons, Hamilton, Ill.

WANTED—Your order for "Superior" Foundation. Prompt shipments at right prices.
Superior Honey Co., Ogden, Utah.

WANTED—Undamaged copies of February, 1920 American Bee Journal. Will pay 10c a piece. When mailing wrap so the entire copy is covered.
American Bee Journal,
Hamilton, Ill.

WANTED—Extracted honey in white and amber grades. State lowest price; how packed. Send sample.
Harmony Bee & Honey Co.,
White Bear Lake, Minn.

## SITUATIONS

See Atwater's classified honey adv't.

WANTED—Position in apiary; 3 years experience; age 18. Note wages and description of apiary.
Winslow Shearman,
Jamestown, N. Y., Route 77.

WANTED—What have you to offer young man, 24 years old, having had one summer in apiary of 300, run for extracted. Can handle cars. Address L. D. Blair, 240 Euclid Ave., Ridgeway, Elk Co., Pa.

WANTED—Man to help with bees. State age, experience and wages wanted in first letter. Board furnished.
Mathilde Candler, Cassville, Wis.

WANTED—One experienced man, and students or helpers, in our large bee business; good chance to learn. Modern equipment and outfit, including auto truck; located near summer resorts. Write, giving age, height, weight, experience, reference and wages wanted.
W. A. Latshaw Co., Clarion, Mich.

WANTED—Will need more help. Refer to my advertisement February and March; 1,000 colonies. Write fully. E. F. Atwater, Meridian Idaho. Former Special Field Agent in Beekeeping, U. S. Department Agriculture, California, Arizona and New Mexico.

WANTED—Experienced man for comb honey. Give age, experience and salary expected.
B. F. Smith, Jr., Fromberg, Mont.

WANTED—Man for season of 1920 to work with bees. State age, experience and wages. We furnish board. Opportunity for permanent situation to right man. Also want man to work in shop, put up honey and do general shop work and make deliveries.
The Rocky Mountain Bee Co.,
Box 1319, Billings, Mont.

WANTED—One or two good queen-rearing men to begin work February 16, 1920.
Nueces County Apiaries, Calallen, Texas.

## SUPPLIES

See Atwater's classified honey adv't.

FOR SALE—At right prices, Root, Jumbo 10-frame, dovetailed hive bodies, 16¼ in. wide, with metal-spaced frames. Everything nailed and painted 3 coats of white. Work done by expert mechanics. This lot of 300 bodies has never been out of our warehouse. Dadant medium brood foundation for Jumbo frames, but offered only when brood-chambers are ordered. We can make verified statement, naming several apiary inspectors, that no disease has ever been found in our yards or in this section. Send for complete price list and prices. We also offer all kinds of Root 8 and 10-frame supplies slightly used. Orders carefully packed and prompt shipments made. Here are the best of supplies ready to go into the apiaries at money-saving prices.
The Hoffman Apiaries, Janesville, Minn

FOR SALE—We make Cypress hives, frames, supers, feeders. Write us for prices. Honey barrels for sale.
Sarasota Bee Co., Sarasota, Fla.

FOR SALE CHEAP — Bee hives and supers, good as new, nailed and painted.
Henry Feder, Jr.,
West Allis, Wis., R. 5, Box 173, 68th Ave.

FOR SALE—500 good second hand 60-lb. cans, two to the case, 80c per case.
H. Rohrs, Hinsdale, Ill.

FOR SALE—10-frame dovetailed hives in lots of one to fifty, very cheap.
Wm. Craig, Aitkin, Minn.

SPECIAL PRICE overstock sale on 1-story, 8-frame S. W. hives. Shipping cases to hold 24 sections 4¼x4¼x1½ Hoffman frames 1½-inch spacing. Modified frames, Jumbo depth, 1½-inch spacing. Ask for quotations.
A. G. Woodman Co., Grand Rapids, Mich.

FOR SALE—100 2-story 10-frame hives, nailed and painted. About one-half of bodies, covers and bottoms were used one season. Each hive consists of two full depth Langstroth dovetailed bodies, Leahy make, of Idaho white pine, 14½ inches wide inside. One metal roof cover and inner cover. One cypress reversible bottom, 20 nailed and wired, all wood frames with half inch top bar, and 20 full sheets of med. brood foundation, 8¼ in. wide, to fit these frames. Five hives, $40; 10 hives, $76; 25 hives, $180; 100 hives, $675. 100 same bodies K. D. with rabbets and nails, 5, $4.25; 10, $8.25; 100, $80. 1,000 same frames with nails, per 100, $4.25; 1,000 sheets same foundation, 70c per lb; 400 Hoffman frames, K. D., 100 at $5.75. One 50-lb. box and two 25-lb. boxes of Dadant's med. brood foundation for L. frames, 70c per lb. 100 wood and 7 wire queen excluders, never used, 5 for $3.75, 50 for $36. 50 cases two 5-gal. cans, each 80c case, f. o. b. Watertown. Send draft, cashier's check or money order.
C. E. Dustman, Watertown, Minn.

FOR SALE—100 Root 10-frame, extracting supers, with frames. Lots of 5 K. D. Will discount.
D. S. Durall, Hurdland, Mo.

FOR SALE—Good second-hand double-deck comb-honey shipping cases for 4¼x4¼x1⅞ sections, 25 cents per case, f. o. b. Cincinnati; terms cash with order.
C. H. W. Weber & Co.,
2146 Central Ave., Cincinnati, O.

FOR SALE—Good second-hand empty 60-lb honey cans, two cans to the case, at 60c per case f. o. b. Cincinnati. Terms, cash with order.
C. H. WEBER & CO.,
2146 Central Ave., Cincinnati, O.

SEND us a list of goods wanted and will quote you lowest prices. We are the money-saving house. Price list free. Try us.
H. S. Duby & Son, St. Anne, Ill.

I MANUFACTURE cypress bee hives, and sell Lewis' beeware. Write for booklet.
J. Tom White, Dublin, Ga.

### MISCELLANEOUS

See Atwater's classified honey adv't.

WANTED—Beeswax, old combs and cappings to render on shares. Will pay highest market price and buy your share of the beeswax.
F. J. Rettig & Sons, Wabash, Ind.

WRITE for shipping tags and our prices for rendering your old combs, cappings, etc. We guarantee a first-class job.
The Deroy Taylor Co., Newark, N. Y.

FOR SALE—Silver Spangled Hamburg eggs and fine cockerels.
Elias Fox, Union Center, Wis.

BLACK SIBERIAN HARES—Enormous sizes, delicious meat and beautiful fur. Write for information and prices.
Siberian Fur Farm, Hamilton, Canada.

FOR SALE—Five acres land in Polk County, Florida, suitable for apiary, fruit and vegetables. $175 for quick sale.
Frank Johnson, Gary, Ind.,
Care Gary Heat, Light & Water Co.

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**HAMILTON, ILL.**

### The Golden Tape

A golden tape is reeled before you every day. You cannot stop it, nor retard it, nor hurry it.

And having passed, no power can recall it.

It is absolutely free. You can coin every inch of it and use the coin, or you can let it roll by, untouched by your effort. It travels fast, and no man yet has coined his full quota.

What is your average?

The golden tape is—Time.

—H. A. Nelson.

### Are You Prepared

Are you prepared, Mr. Beekeeper, to coin the valuable days of flower bloom? They will be here before we realize it. Are you prepared, and ready with sufficient excess supplies, and with the new foundation? Have you enough sections and frames?

We are anxious to serve you in all departments of your work. We are so located as to be able to give you unusually prompt and direct shipments. Let us help you coin the golden tape. We solicit your business and guarantee to satisfy you. Use us.

**The A. I. Root Co.**
**OF IOWA**
Council Bluffs, Iowa

Read ***"THE BEEKEEPER"***

The only Canadian bee publication. Keeps beekeepers closely in touch with Apicultural conditions in Canada. It is the official organ of the Beekeepers' Associations for the three provinces—Ontario, Manitoba and New Brunswick. Beekeeping and horticulture are effectively combined to make a live, attractive and practical publication.

Price, postpaid, $1 per year
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Send for a free sample copy

**The Horticultural Publishing Co., Ltd., Peterboro, Ontario**

**FLORIDA BEES AND QUEENS**

The first part of April I will be fully ready to fill orders for queens and bees as follows: Two-frame nuclei with untested queen, $6; untested queens, $1.50 each; tested, $2. From my long-tested and best Italian stock.

BEEKEEPERS' SUPPLIES—DADANT'S FOUNDATION

A complete stock of everything for the Dixie beekeepers, right here at home. My cypress catalog of cypress hives and hive parts will interest you in prices.

DIXIE BEEKEEPER

This monthly publication tells of Dixie as a bee country and how we are keeping bees here; $1 a year. Sample copy free.

**J. J. WILDER, Waycross, Georgia**

**EAGLE "MIKADO"** **PENCIL No. 174**

174 EAGLE MIKADO No2 EAGLE

Regular Length, 7 inches

For Sale at your Dealer. Made in five grades
Conceded to be the Finest Pencil made for general use.

EAGLE PENCIL COMPANY, NEW YORK

# QUEENS—FINE ITALIAN—QUEENS

## FROM SELECTED BRED-UP STOCK

Now booking orders for June delivery at following prices:

Pure mating, safe arrival and satisfaction guaranteed

| | 1 | 12 | 100 |
|---|---|---|---|
| Untested | $1.35 | $15.00 | $110 00 |
| Select Untested | 1.75 | 18.00 | 150.00 |
| Tested | 2.50 | 24.00 | 200.00 |

A few more package bees for late May and early June delivery.

**E. A. HARRIS, Albany, Alabama**

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**Am now booking orders for Michigan-bred Queens**

## THREE BAND ITALIANS ONLY

**TESTED DISEASE RESISTORS**

**PRICES**

| | June 15 to July 15 | | | July 15 to Oct. 1 | | | |
|---|---|---|---|---|---|---|---|
| | 1 | 6 | 12 | 1 | 6 | 12 | 100 |
| Untested | $1.50 | $8.00 | $15.00 | $1.30 | $7.50 | $13.50 | $110.00 |
| Select untested | 1.75 | 9.00 | 16.00 | 1.60 | 8.00 | 14.00 | 115.00 |
| Select tested, any time after June 20 | | | | 3.00 | 16.00 | 29.00 | |
| Select day-old virgins, after June 1 | | | | .60 | 3.50 | 6.50 | 50.00 |

All queens hatched in nursery cages and any inferior ones are killed.

All queens mated in two-frame or three-frame nuclei. No baby nuclei in yard.

Books opened April 1. If you are going to need **good** queens this summer now is the time to order them.

**D. A. DAVIS, Birmingham, Mich.**
**216 Greenwood**

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**EARLY QUEENS BY RETURN MAIL**

## IF YOU WANT THE CHEAPEST, BUY THE BEST

Weather permitting, I will begin mailing my bright Italian Queens April 1, at the following prices:

Untested, single, $1.50, six for $7.50, twelve for $14. Select tested for breeding, $4 each.

I guarantee every queen I send out, and your money refunded if not satisfied. I also guarantee safe delivery, free from disease; and quick service. All orders will receive prompt attention and will be filled by return mail, or as soon as possible after receiving your order. Now is the time to send in your orders if you want early queens.

**A. B. MARCHANT, Jesup, Ga.**

---

THAGARD'S ITALIAN QUEENS

**Bred for Quality**

| | |
|---|---|
| Untested | $1.50; 6, $7.50; 12, $13.50 |
| Select untested | $1.75; 6, $9.00; 12, $16.00 |

I guarantee pure mating, safe arrival and perfect satisfaction. Circular free.

**V. R. THAGARD, Greenville, Ala.**

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FOR SALE—HIVES

100 new standard dovetailed, 10-frame hives, never used; nailed, painted two coats white paint; one-story hives complete with Hoffman frames and full sheets foundation, $3 each. Also 100 extra bodies used one year as supers for extracting, with frames, but no foundation, $1 each. All painted white, and in fine condition. Cash bargain.

**W. B. DAVIS CO., Aurora, Ill.**

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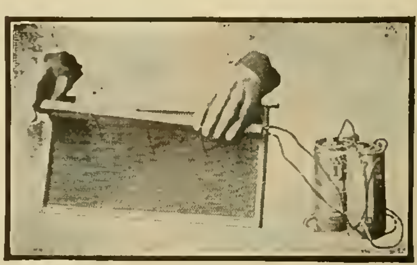

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**Price without Batteries $1.25**
Not postpaid.

**Actually cements wires in the foundation. Will work with dry cells or with city current in connection with transformer. Best device of its kind on the market.**

**For sale by all bee supply dealers**

**Dadant & Sons, Manufacturers HAMILTON, ILL.**

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QUEENS FOR SALE

Golden and 3-band Italians (the kind that fill from 2 to 6 supers). Untested (either kind), $2 each, $11 for 6; $45 for 25. No discount for 50 or 100 lots Tested, $3 each, $16 for 6, $30 for 12. Full colonies of bees (with queen), $12 and $15 each for 8 and 10-frame Root Co., hives, without supers.

**MISS LULU GOODWIN,**
**Mankato, Minn., Box 294.**

## PRICES OF QUEENS

| | Nov. 1 to June 1<br>1 | 6 | 12 | June 1 to Nov. 1<br>1 | 6 | 12 |
|---|---|---|---|---|---|---|
| Untested | $2.00 | $9.00 | $16.80 | $1.50 | $8.00 | $14.50 |
| Select untested | 2.25 | 10.50 | 18.00 | 2.00 | 9.50 | 16.00 |
| Tested | 3.00 | 16.50 | 30.00 | 2.50 | 12.00 | 22.00 |
| Select tested | 3.50 | 19.50 | 36.00 | 3.00 | 16.50 | 30.00 |

**Breeders $7.50 to $15.00**

Queens for export will be carefully packed in long-distance cages, but safe delivery is not guaranteed.

"The queen that I got from you last season made honey when the other bees were taking lunch to the fields with them (when they went at all)". H. M. TICHENOR, Centertown, Ky.

2058 Yonge St., Toronto Canada March 19, 1920.

Friend Davis:

The colonies headed by your queens are through this far in fine shape. It was a pleasing sight to see them take their first flight (after 4 months) this last week. What is the price of queens to us folks on this side this year, and when could you start to send me up some? A reply would oblige

Yours Respectfully,

P. F. OLIVER.

**No Nuclei, Full Colonies or Pound Packages.**

**BEN G. DAVIS, Spring Hill, Tenn.**

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## BEEKEEPERS

We manufacture millions of **sections** every year that are as good as the best. The **cheapest** for the **quality; best** for the price. If you buy them once, you will buy again.

We also manufacture **hives, brood-frames, section holders** and **shipping cases.**

**Our Catalog is free for the asking**

**MARSHFIELD MFG. CO., Marshfield, Wis.**

## BEEKEEPERS' SUPPLIES—QUALITY AND SERVICE

Now is the time to order your season's supply of Bee Material so as to have them ready for the honey flow. For lack of hives and other goods, you cannot afford to let your bees fly away, **bees are valuable.** We have everything required for practical beekeeping. Our goods for ideal of quality, quality of workmanship. Our 1920 catalog is now ready to send out, send for one, it is full of good stuff.

**AUGUST LOTZ CO., Boyd, Wis.**

# BEE SUPPLIES

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Best goods made. Get our big discount sheet before buying.

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128 Grand Ave.
**Kansas City Mo.**

# PORTER BEE ESCAPE SAVES HONEY TIME MONEY

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BEE ESCAPE
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**For sale by all dealers.**
**If no dealer, write factory**
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**(Please mention Am. Bee Journal when writing)**

Send for Catalogue of Honey Labels and Stationery.
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# BEES

We furnish full colonies of Italian bees in double-walled hives, single-walled hives, shipping boxes and 3-frame nucleus colonies.

**I. J. STRINGHAM, Glen Cove, N. Y.**
**NASSAU, CO.**

## WESTERN BEEKEEPERS!

We handle the finest line of bee supplies. Send for our 68-page catalog. Our prices will interest you.

**The Colorado Honey Producers' Association, 1424 Market St., Denver, Colo.**

Write for Price List and Booklet descriptive of

**HIGH-GRADE**
**Italian Queens**

**JAY SMITH**
**Route 3**
**Vincennes, Ind.**

## HERE THEY ARE MR. BEEKEEPER

**at Newark, Wayne Co., N. Y., ready to answer your call. The best of everything. Just read this list:** Lewis Beeware, Sections, Shipping Cases, Frames, Hives, Hershiser Wax Presses and other supplies, Dadant's Unexcelled Foundation, all standard weights and sizes; also the Electric Wire Imbedder, Bingham Uncapping Knives, including steam heated, with oil stoves and generators. Bingham Smokers, all sizes, with geunine leather bellows; Root's Extractors, all sizes of hand and power machines; Bee Books, written by all leading authors in beedom.

All sizes of Friction Top Pails, and also 60-lb. Cans, new and second hand. Also Cement-coated Nails for nailing beehives and supplies; and all sized spools of Tinned Wire, Bee Brushes, Feeders, Queen-Rearing Cages, Bee Gloves and Capping Melter, and all practical supplies you will need.

A market for your honey or wax and a plant to render your old combs and cappings.

Over 1,000 beekeepers took advantage of this service station at Newark in 1919 for the first time. Now all together for a greater 1920.

New catalog free. Our discounts will save you money.

**THE DEROY TAYLOR CO., Newark**
**(Wayne Co.) New York.**

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You can make your business more profitable and easier to handle through the proper use of modern equipment. This is supplied in LEWIS BEEWARE by

**WESTERN HONEY PRODUCERS**
**SIOUX CITY, IOWA**

**SEND LIST OF YOUR NEEDS OR REQUEST FOR NEW CATALOG TO DEPT. B**

### LET US BOOK YOUR ORDERS NOW FOR

# ROOT QUEENS

Raised in our famous Home Yard, Basswood Yard, Wardell Yard and Maple Grove Yard, by our experienced queen breeders, Mel Pritchard, Arlie Pritchard and John Mosgrove, under the direct supervision of E. R. Root and our Apiary Manager, M. J. Deyell.

SPECIAL CONTRACT PRICES.—Write immediately for special contract prices, stating quantity wanted, date of delivery desired, and whether tested or untested.

**THE A. I. ROOT COMPANY, Medina, O., U. S. A.**

# QUEENS, SELECT THREE-BANDED ITALIANS

Reared from the best mothers and mated to select drones.

**Prices of Queens**

| | May 1st to June 1st | | | June 1st to July 1st | | | July 1st to Nov. 1st | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1 | 6 | 12 | 1 | 6 | 12 | 1 | 6 | 12 |
| Untested | $2.00 | $ 9.00 | $16.80 | $1.50 | $ 8.50 | $14.50 | $1.30 | $ 7.50 | $13.50 |
| Select Untested | 2.25 | 10.50 | 18.00 | 2.00 | 9.50 | 16.00 | 1.75 | 8.50 | 15.00 |
| Tested | 3.00 | 16.50 | 30.00 | 2.50 | 12.00 | 22 00 | 2.00 | 10.00 | 18.50 |
| Select Tested | 3.50 | 19.50 | 36.00 | 3.00 | 165.00 | 30.00 | 2.75 | 15.00 | 27.00 |

Orders booked now for May delivery. Pure mating, safe arrival and entire satisfaction guaranteed. Wings clipped free. Write for descriptive circular.

**HARDIN S. FOSTER, Columbia, Tenn.**

# Crop and Market Report

Compiled by M. G. Dadant

Owing to the extra long and hard winter, we look for severe losses throughout the whole north of the country, and the reports coming in confirm this to a large extent. Throughout the New England States the losses have been extra heavy, ranging around 25 per cent.

In New York, cellar wintered bees seem to be coming out with a 2 to 4 per cent loss, where there is no disease. Outside, the loss will run from 20 to 30 per cent, and probably more where there is disease. The prevalence of American foulbrood in some localities in New York will just about wipe out some of the beekeepers.

One report from Pennsylvania gives the loss at 40 per cent, while others do not seem to think it will be quite so severe. In New Jersey the loss will be about 25 per cent.

Throughout the southeast the loss does not seem to be so heavy, although we have a report from one of the large Georgia beekeepers that his loss will range around 20 per cent. Other reports indicate from 1 to 5 per cent loss. This applies to all the territory south of the Ohio and east of the Mississippi river.

Losses throughout southern Illinois, Missouri and southern Iowa seem to be small, while further north the losses increase. In Wisconsin cellar wintered bees are coming out in very good shape. In Michigan cellared bees report about a 2 to 5 per cent loss. Through the States of Michigan, Wisconsin and Minnesota, however, outdoor wintered bees are reporting very heavy losses, ranging from 20 to 40 per cent.

In Texas the loss has been from 5 to 15 per cent, averaging probably about 10 per cent, while some apiaries report no loss, with bees in excellent condition. Arizona and New Mexico have an average loss of from 2 to 5 per cent, while Colorado reports better than ordinary with from 2 to 7 per cent loss. Some few apiarists report much heavier loss than this, ranging from 15 to 20 per cent.

In Montana the loss has been fairly large, ranging from 5 to 15 per cent, as it has in Wyoming and Utah. One reporter in Idaho reports 75 per cent of his bees dead on account of honeydew stores.

In California the percentage of loss varies greatly. Some of the best beekeepers report 15 to 20 per cent loss, while some in more favorable localities think that their loss will not run 2 per cent.

## CROP PROSPECTS

The white clover prospects are very clouded. In the New England States they seem to be from poor to fair, whereas, New York and Pennsylvania claim very good prospects for clover. Throughout the rest of the north prospects are only fair. Reports from Iowa indicate that different sections of the State will have from poor to excellent crops of clover, should the weather be good. Throughout the southeast the prospects are very good, as they are in Texas. The northwest cannot report until later just what honey conditions will be, but reports seem to indicate that the sweet clover will come out in good shape. In California the prospects are fair.

## WHAT WILL THE PRICE BE?

The poor demand for honey now and the lower price would indicate that the price on honey for next year would not be quite as high as it was last fall. However, the sugar situation has much to do with the price of honey.

We have been following very closely the prices of sugar in the late market and do not see from them any indications that honey should be very low in price. Sugar is selling in the retail market at 28c per pound, and is probably a little higher in the east.

Our wholesale dealer advises us that we will have to pay about 22c to 25c for the next sugar he is able to sell us for feeding our bees, whereas the last lot bought a few weeks ago cost us less than 18c.

Raw sugar is now quoted on the New York market at 18c per pound, with pure refined approximately higher.

The selling of futures in sugar would not give any indications that the price is to drop before winter. Practically every report gives a raise in future of from 60 to 100 points, the only drop in futures being reported for the next March delivery. With such conditions it would not seem that the sugar price would be much below 20c per pound and would possibly range much higher. Inside conversation with a buyer who had bought two or three million pounds of sugar in Cuba last fall indicates that he is of the opinion that sugar will sell at wholesale at from 30 to 35c per pound before winter. With this high price there is no doubt but that honey will hold up to present levels, and probably exceed them.

We give this information for what it is worth and would not care to make any guess as to what the results would be. However, we believe that beekeepers who are holding honey on hand should not be discouraged at not being able to sell it at the figure they are asking. Surely the price of honey cannot drop very much.

The United States Department of Agriculture market report indicates that the demand for honey in all large centers is very weak and few sales are reported. The amount of export during February of honey amounted to 335,000 pounds, whereas last year practically a million pounds were exported.

*Take a Tip From Me, Beginners*

I've used "Falcon" queens and bee supplies over 20 years. Always had luck with them. My advice to you is: let "Falcon" supplies start you on the right road. Swarms of successful apiarists say the same thing.

For over 40 years "Falcon" supplies have been marketed wherever high quality is recognized. Experienced bee-keepers buy them year in and year out.

**W. T. FALCONER MFG. COMPANY**
**Falconer, N. Y., U. S. A.**
*Where the Best Beehives Come From*

*Write for Red Catalog and "Simplified Beekeeping"*

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**FRAMES**

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**QUEENS AND BEES**

*ROOT QUALITY*

**We are at your service,** as you face the coming season, with a full line of all the supplies that you need to make your work successful Your order can leave our siding over only one of nine trunk lines, and we make it our first consideration to see that it is shipped to you by the cheapest, and over the shortest possible route.

**And remember,** also, that in accepting any order, we obligate ourselves to serve you in any and every way we can, for bigger and better business.

**Use us.** We believe that the quality of our goods and the character of our service will please you. Indeed, Mr. Honey-Producer, we guarantee that it will.

*ROOT SERVICE*

**THE A. I. ROOT CO. OF IOWA**
**COUNCIL BLUFFS, IOWA**

CHARLES MONDENG
Bee Keepers' Supply Mfg. Plant.
CHARLES MONDENG
BEE KEEPERS SUPPLIES

**A BIG STOCK OF**
**BEE SUPPLIES**

ALL BOXED, ready to ship at once—thousands of Hoffman Frames; also Jumbo and Shallow Frames of all kinds—100 and 200 in a box. Big stock of Sections and fine polished Dovetailed Hives and Supers.

I can give you bargains. Send for a new price list. *I can save you money.*

**Will take your Beeswax in Trade at Highest Market Price**

**CHAS. MONDENG**
**159 Cedar Lake Road MINNEAPOLIS, MINN.**

**EARLY ORDER DISCOUNTS WILL**
**Pay You to Buy Bee-Supplies Now**

Thirty years' experience in making everything for the beekeeper. A large factory specially equipped for the purpose ensures goods of highest quality. Write for our illustrated catalog today.

**LEAHY MFG. CO., 90 Sixth St., Higginsville, Mo.**
**or J. W. ROUSE, Mexico, Mo.**

**BARNES' Foot Power Machinery**

Read what J. E. Rarent, of Chariton, N. Y., says: We cut with one of your Combined Machines last winter 50 chaff hives with 7-in. cap, 100 honey-racks, 500 frames and a great deal of other work. This winter we have a double amount of hives, etc., to make with this saw. It will do all you say of it." Catalog and price list free.

**W. F. & JOHN BARNES**
**995 Ruby St., ROCKFORD, ILLINOIS**

PAT. JULY 30, 1918

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*Made for the Huffman Brood Frames.* A combined Nailing, Wiring and Wedge Clamping Device. Has been tried and is guaranteed to do accurate work.

PRICE $7.50

Complete directions for operating are furnished with each device.

Manufactured by C. O. BRUNO
1413 South West Street, Rockford, Illinois

**Established 1885**

We are still furnishing beehives made of white pine; they will last. A. I. Root Co.'s make of bee supplies kept in stock. Send for catalog giving full particulars; free for the asking. Beeswax in exchange for supplies, or cash.

**JOHN NEBEL & SON SUPPLY CO.**
**High Hill, Montg. Co., Mo.**

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**DON'T GUESS MAKE SURE. "HAVE A LOOK"**

CYPRESS LASTS PRACTICALLY FOREVER

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For all uses that invite decay (for instance, bottoms) demand

**"ALL-HEART"**

*"Tidewater" Cypress*

"THE WOOD ETERNAL"

The "arrow" on the end of each board identifies the genuine product of the cypress mills whose CHARACTER of timber, methods of manufacture, and complete responsibility enable them to be members of the Association.

THIS FACT IS YOUR PROTECTION.

**ACCEPT NONE BUT TRADE-MARKED "TIDEWATER" CYPRESS**

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Insist on TRADE-MARKED Cypress at Your Local Lumber Dealer's — If he hasn't it, LET US KNOW

**FOREHAND'S THREE BANDS**

**THE THRIFTY KIND**

We have been breeding these queens for the market for over a quarter of a century. They are bred from the imported Italians, but by select breeding we have brightened the color and retained the good qualities of their mothers.

After years of select breeding we have built up a strain of bees that are **surpassed by none, but superior to many.** Our queens are thrifty, hardy, gentle and beautiful.

We guarantee pure mating, safe arrival and satisfaction.

**PRICES: After April to July 1**

Untested—1, $1.50; 6, $7.50; 12, $13.50; 100, $1 each.
Select untested—1, $1.75; 6, $9; 12, $16.50; 100, $1.25 each.
Tested—1, $2.50; 6, $13; 12, $24.50; 100, $2 each.
Select tested—1, $4; 6, $22; 12, $41.50; 100, $3.35 each.

**Pound Bees from April 15 to June 30**

One-pound package—1, $3; 25 or more, $2.75.
Two-pound package—1, $5; 25 or more, $4.60.
Three-pound package—1, $7; 25 o more, $6.45.
Add the price of the queen wanted.

**W. J. FOREHAND & SONS, The Bee Men**
**Fort Deposit, Alabama**

# THE BIG HIVE

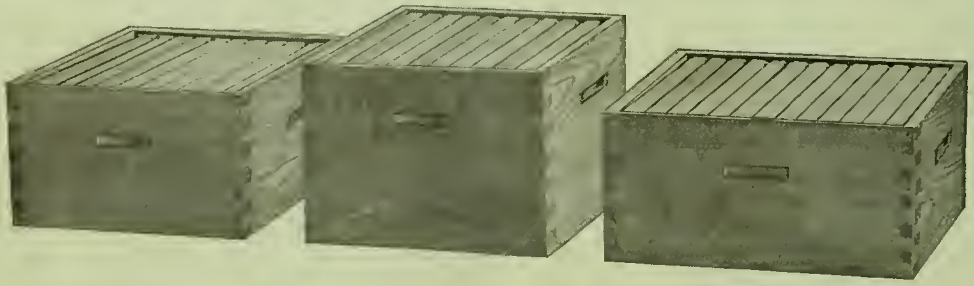
HOW LARGE A HIVE? Beekeepers make very different answers. No one hive can serve the needs of all beekeepers and all beekeeping conditions. So some beekeepers still swear by the Langstroth 8-frame hive, and tell you why it is best for their locality and their honey-flow. They won't have any other. Very many more will say the 10-frame Langstroth is just right. In these later days, there are excellent beekeepers, too, who declare for a bigger hive—they want a deeper hive than the Langstroth, with deeper frames, or they want a hive big enough to hold 12 or 13 of the standard Langstroth frames.

## THE JUMBO HIVE

To meet the requirements of beekeepers who have wished the bigger hives, this Company has been manufacturing the "Jumbo" hive for more than 20 years. It is a deep hive, being 11 13-16 inches in depth, and the frames are 11¼ inches deep, or 2⅛ inches deeper than the regular Langstroth. Otherwise it is standard Langstroth. It will take 10 L. supers, covers, bottom-boards, etc., without any change whatever. It has 3,400 square inches of comb capacity as compared with 2,700 in the standard 10-frame hive. It provides completely for the larger brood-chamber, better swarm control, good ventilation, and excellent wintering features, claimed for the deep hive by those who prefer it.

## THE SQUARE JUMBO HIVE—13 FRAMES

For those wanting an even larger deep hive than the Jumbo, we supply the Square Jumbo. The depth is the same as the regular Jumbo, but it has 13 frames. The big Jumbo has a comb capacity of 4,400 square inches, with 13 frames (or 63% more than the 10-frame L. hive) and 4,080 with 12 frames and the 1½-inch spacing. It makes a square hive—easy to manipulate because it fits the bottom-board, however it is spaced, and the supers and covers are more easily placed. This hive meets the wants of the advocates of the big, big hive—it is deep and wide both. A shallow-depth super is furnished with this hive.



The Standard 10-frame Hive    The Jumbo    The Root Square Hive

## THE ROOT SQUARE HIVE—13 L. FRAMES

We have now been manufacturing this large hive for a year. It meets the needs of many progressive beekeepers who want a large brood-chamber for building up enormous colonies for the honey-flow, and yet permits the use of the standard L. frames which so many beekeepers have on hand. The single brood-chamber holds 13 frames with 1⅜-in. spacing, giving a comb capacity of 3,480 sq. ins. (30% more than the standard 10-frame Langstroth); or it will hold 12 Hoffman or metal spaced frames, giving 1½-in. spacing, with one-fifth more comb capacity than the 10-frame hive. Equipment for 1½-in. spacing at the same price as our regular 1⅜-in. spaced frames. It has the advantages of easy manipulation, due to being square—fits the bottom-board however turned, thus permitting placing combs parallel to the entrance for winters—and supers and covers are easy to place in position. This hive gives a large brood-chamber and either the 1⅜ or 1½ in. spacing, while it requires only the regular L. frames so generally owned by beekeepers. Shallow extracting supers are regularly furnished with this hive, depth 5⅝ ins., frames 5⅜ ins. deep.

Square Jumbo and the Root square (13-fr.) hives furnished at present from Medina only. Write for full description and detailed prices.

**THE A. I. ROOT COMPANY, Medina, Ohio**

VOL. LX

NO. 6

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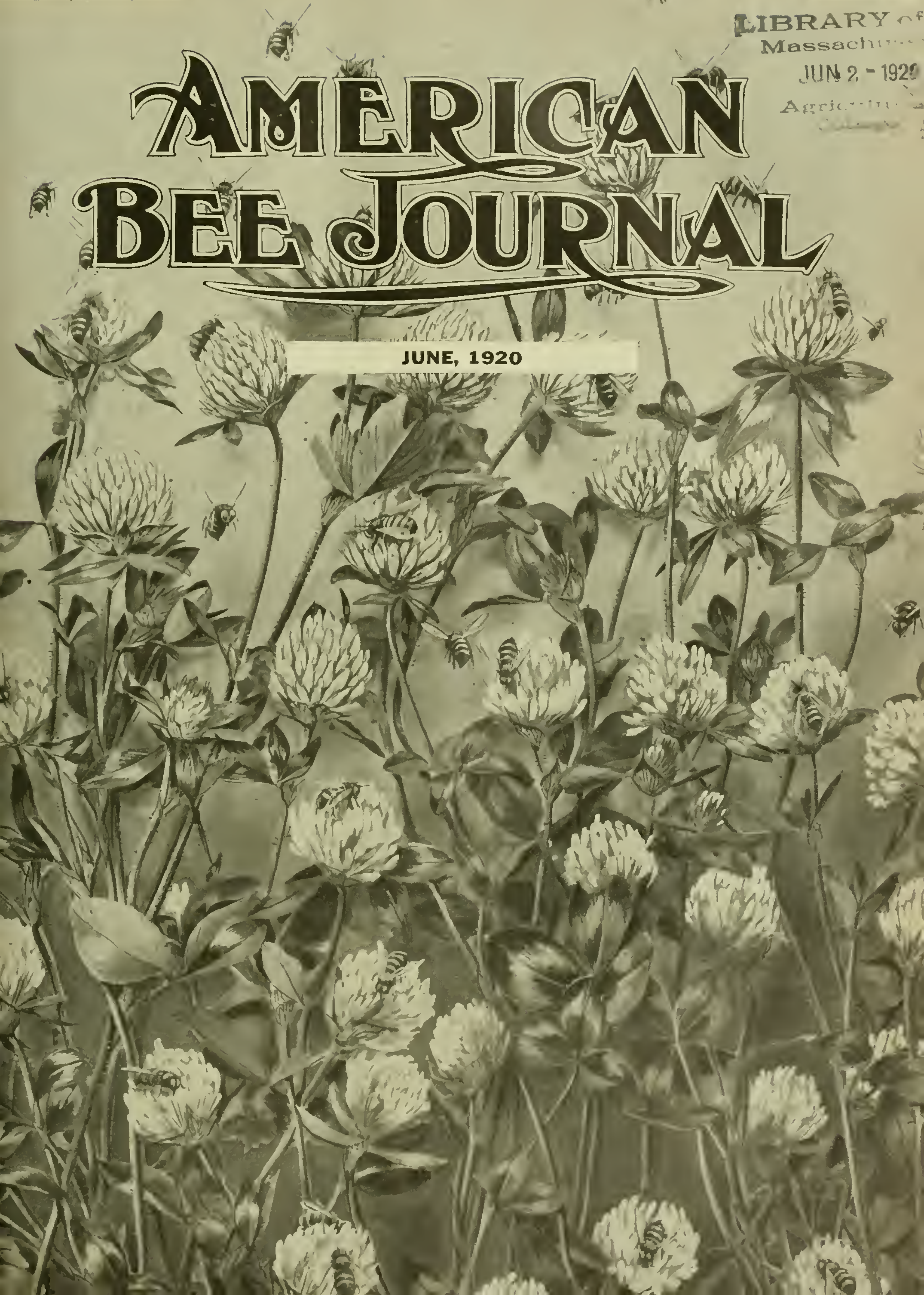
# AMERICAN BEE JOURNAL

JUNE, 1920



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WE pay you the highest market price for rendered wax, less 5 cents per pound rendering charge. Our special hydraulic steam wax press gets the very last drop of wax from old combs and cappings assuring you maximum profit on them. Write for full particulars.

## *Best Prices Paid for Honey*

SEND us samples of your honey and we will quote you a price equal or better than that of any other concern. We buy and sell both comb and extracted honey. Cash remitted in full the same day shipment is received.

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Hives, all sorts
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THIS new catalog contains over 40 pages of every variety of Beekeeper's Supplies, including all the latest and most improved devices. It is really a valuable reference book on beekeeping accessories.

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***"THE BUSY BEE MEN"***
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### THE HONEYBEE

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A very complete text on beekeeping. 575 pages, attractive cloth binding, $1.50. French edition, $1.75; Spanish, $2.

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## NEW BINGHAM BEE SMOKER

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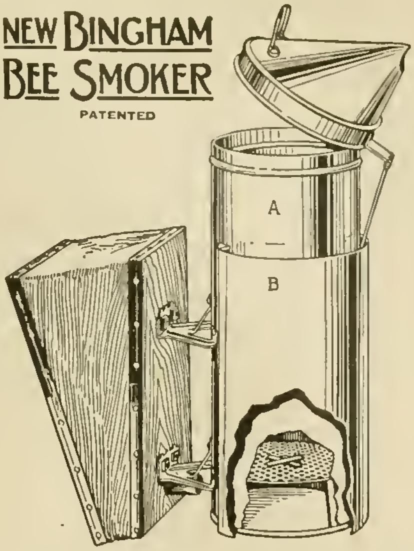
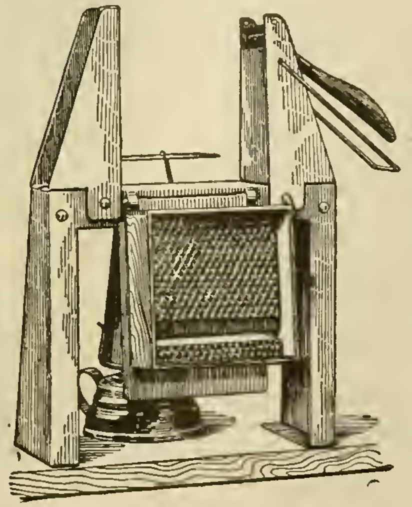


The Bingham Bee Smoker has been on the market over forty years and is the standard in this and many foreign countries. It is the all important tool of the most extensive honey producers in the world. It is now made in five sizes.

| Postage extra | Size of stove | Shipping weight. | Price. |
|---|---|---|---|
| Big Smoke, with shield | 4x10 inch | 3 pounds | $2.50 |
| Big Smoke, no shield | 4x10 inch | 3 pounds | 2.00 |
| Smoke Engine | 4x 7 inch | 2¼ pounds | 1.50 |
| Doctor | 3½x7 inch | 2 pounds | 1.15 |
| Conqueror | 3x 7 inch | 1¾ pounds | 1.00 |
| Little Wonder | 3x5½ inch | 1½ pounds | .80 |

Smoke Engine or Doctor in copper, $1 extra.



East Lansing Mich.,
A. G. Woodman Co.,
Grand Rapids, Mich.

I have now had several weeks' opportunity to try out the New Smoker called the Big Smoke, with the guard about the fire pot. The smoker is even more than I anticipated and unless something else is brought out that is still better, you can be assured that this particular one will be standard equipment for this place from now on.

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Did you read Prof. H. F. Wilson's write-up in Gleanings, March issue, in regard to the packages of bees and queens he received from me last year? Notice he said some of those packages of bees and queens received in May gathered 150 pounds of honey. That speaks for itself in regard to the quality of my **Queens**. The 2-pound packages of bees and queens I shipped Mr. David Running in 1917 gathered 140 pounds of honey (He was then President of the National Beekeepers' Association). Have booked all the orders I can guarantee shipping on time for April, but send for **Free Circular** for later shipping, which states our guarantee; also gives prices on bees by parcel post, nuclei, etc., 3-banded and Golden queens. Have secured the best queen men obtainable, and we are prepared to turn out 6,000 **Queens** per month. They do nothing but take pains in rearing the best of queens. Careful inspection before shipping. Have an entirely separate crew for shipping bees, etc.; 20 years a beekeeper.

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Father and son did the work themselves, in an old log house, or if weather permitted, in the shade of a small oak sapling just north of the house.

The little oak sapling under which **Dadant's Foundation** was first made is now 3 feet through. The little flat top room at the right was the first Dadant Foundation factory

There were other beekeepers, just as anxious as they to get good comb foundation and the first year, besides supplying their own needs the Dadants sold 500 pounds. Thus for the first time **Dadant's Foundation** was placed on the market.

The little oak sapling grew as did their foundation business. The second year they sold 2000 pounds of **Dadant's Foundation** and had to hire some help. All of the wax rendering was done by the elder Dadant who took great pains to do a neat job, and retain in the beeswax the odor of the hive, the bees, of the honey.

The shade of the little oak sapling no longer sufficed, their first wax melting room was soon outgrown for **Dadant's Foundation** was being built on a firm basis, like the oak, and was to see a corresponding growth.

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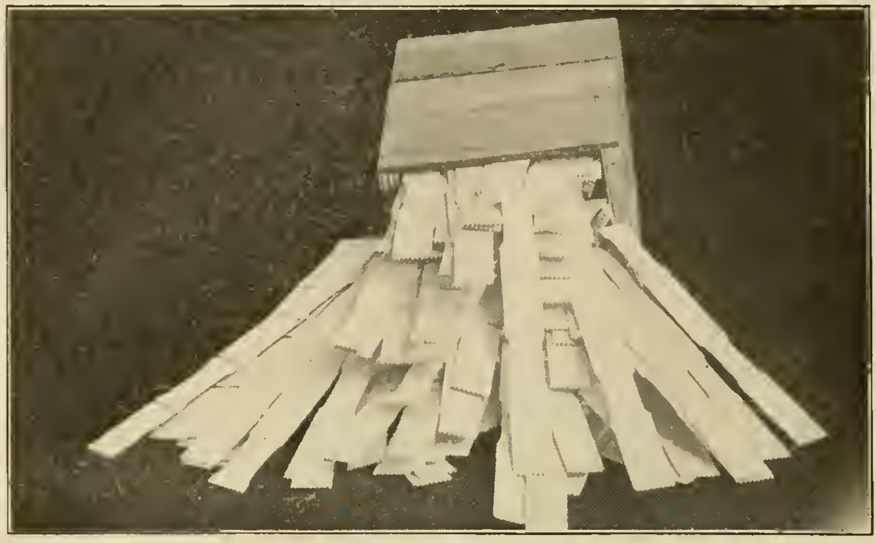

June 28, 1881 was a "Red Letter" day in American Beekeeping.
Lewis one-piece section honey box experiments ended on that date.
Letters of patent were granted to the successful inventor.
These experiments were carried out in the Lewis laboratories.
Next to Langstroth's this invention ranks among the first.
Quality of Lewis sections has been maintained to this day.
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MAKERS OF BEEWARE

AMERICAN BEE JOURNAL

VOL. LX—NO. 6 HAMILTON, ILL., JUNE, 1920 MONTHLY, $1.00 A YEAR

# SELECTION OF BREEDING QUEENS

BY C. C. MILLER

IN the American Bee Journal for July, 1919, page 244, and in Septemper, 1919, page 310, some discussion is given to the matter of selecting best queens as breeders. The beginner who wants to improve his stock by breeding from the best is supposed to have given a careful reading to those two articles, and to have kept a careful record of every pound of honey taken from each colony, as also of each frame of brood taken or given, provided brood is thus taken or given for the purpose of equalizing colonies. He may also have kept track of the killing of queen-cells.

The thing to do now is to assemble the items in a table something like the one that follows:

| No. of Col'y | Queen | Brood Taken or Given | Cells Killed | Lbs. Ho'y | Col. 6 |
|---|---|---|---|---|---|
| 1 | 18 | g2 | Keg | 88 | 65 |
| 2 | 18 | t1 | Kc. Kc. | 100 | 100 |
| 3 | 19 | g3 | Keg Kcg | 110 | |
| 4 | 18 Hybrid | | Kc. | 105 | |
| 5 | 17 | t2 | Kc. | 120 | 135 |
| 6 | 18 | | Noc. | 130 | 130 |
| 7 | 19 | g1 | Kc. Keg | 112 | |
| 8 | 18 | t3 | Keg Keg | 120 | 144 |
| 9 | 19 | g1 | Keg Kc | 73 | |
| 10 | 19 | g2 | Keg Kc. | 80 | |
| 11 | 17 | | Noc. | 122 | 122 |
| 12 | 18 | t2 | Kc. Kc. | 108 | 115 |
| 13 | 18 | | Kc. Kc. Kc. | 87 | 72 |
| 14 | 19 | g3 | Noc. | 90 | |
| 15 | 19 | t1 | Noc. | 70 | |
| 16 | 19 | g1 | Kc. | 104 | |
| 17 | 18 | | Noc. | 124 | 124 |
| 18 | 18 Cross | g1 | Kc. | 90 | |
| 19 | 19 | | Kc. | 86 | |
| 20 | 18 | t2 | Noc. | 110 | 130 |
| 21 | 18 | t2 | Keg Keg | 105 | 119 |
| 22 | 18 | g1 | Kc Kc. | 64 | 44 |
| 23 | 19 | | Noc. | 100 | |
| 24 | 18 | t1 | Kc. Kc. Kc. | 98 | 93 |
| 25 | 18 | t3 | Kc. Keg | 132 | 154 |
| 26 | 19 | g2 | Kc. | 84 | |
| 27 | 18 | g1 | Kc. | 58 | 43 |
| 28 | 18 | | Kc. Kc. | 76 | 66 |
| 29 | 19 | t2 | Kc. | 105 | |
| 30 | 18 | g1 | Keg Keg | 90 | 74 |

The number of each colony will be found in the first column.

In the second column will be found the date of the queen's birth, 17, 18, 19 standing, respectively, for 1917, 1918, 1919. In this column may also be found any peculiarity, such as being off color or temper, and in case of comb honey the appearance of sections with watery cappings.

The third column shows the number of brood, if any that are taken or given in equalizing. If one frame of brood is taken "t1" appears in the column, and if two or three are taken, then "t2' 'or "t3" appears. Similarly, if one, two or three brood are given to a colony, "G-," "g2" or "g3" appears.

In the fourth column "keg" means that eggs were destroyed in queen-cells at one visit, and "kc" means that larvæ were destroyed. If eggs or larvæ were destroyed at subsequent visits, additional entries show it.

Dr. Miller at home

The fifth column shows the amount of surplus honey taken, and then comes the sixth column, the most interesting of all, made up from the fifth as modified by the third and fourth.

If a frame of brood is taken from a colony, it is counted that it will give 10 pounds less of honey, and if this brood be given to another colony its yield will be increased by 10 pounds. So, to make a fair game of give and take, if you take brood you must give honey, and if you give brood you must take honey. It is undesirable to have cells started for swarming; so, if "keg" is found in the fourth column it is counted the same as 3 pounds less of honey, and "kc" is as bad as 5 pounds less honey.

Colony No. 1 has given 88 pounds of surplus. But 2 frames of brood were given to it and, for each of these, 10 pounds of honey must be taken. Taking 20 pounds from 88 pounds leaves 68 pounds. No. 1 must also be penalized 3 pounds for the "keg" that appears, and taking 3 from 68 leaves 65 as the true rating of No. 1, which rating appears in column 6.

To get the rating of No. 2 we add 10 for the "t1" and deduct 10 for the "kc kc," leaving 100 as the rating.

When we come to colony No. 3 we find that the queen was born in 1919. The 110 pounds of surplus stored by the colony was probably due mostly to the worker progeny of her predecessor, and we shall not want to breed from the present queen, if ever, until a full year's crop stands to the credit of her worker progeny, so it is not worth while to put anything in column 6 for colony No. 3. The same may be said of No. 7 and the others that have 1917 queens. Neither would we want to breed from bees off color or temper, so we don't do any figuring on No. 4 or No. 18.

We are now ready to make a list of

our colonies in the order of their rating, beginning with the best:

| | | |
|---|---|---|
| 1 | No. 25 | 154 |
| 2 | No. 8 | 144 |
| 3 | No. 5 | 135 |
| 4 | No. 6 | 130 |
| 5 | No. 20 | 130 |
| 6 | No. 17 | 124 |
| 7 | No. 11 | 122 |
| 8 | No. 21 | 119 |
| 9 | No. 12 | 115 |
| 10 | No. 2 | 100 |
| 11 | No. 24 | 93 |
| 12 | No. 30 | 74 |
| 13 | No. 13 | 72 |
| 14 | No. 28 | 66 |
| 15 | No. 1 | 65 |
| 16 | No. 22 | 44 |
| 17 | No. 27 | 43 |

This is by no means given as a perfect scheme. It may be that ten pounds is not the right number to count as the difference made by the taking or giving of a frame of brood. For that matter it is not a fixed quantity. It is no doubt more in a bumper year than in a year of failure. It need not be considered at all by one who does not practice equalization of colonies. The amount charged up for starting queen-cells is arbitrary, and some would consider it more serious, while others might consider it of little importance. Each one is at liberty to make improvements on the plan or to get up a better one. The likelihood, however, is that no great mistake will be made in breeding from No. 25, which stands at the head of the list, and if anything should happen to the queen of No. 25, then No. 8 should be taken to breed from, and so on down the list. Incidentally it might be mentioned that the queen of No. 27 would be a proper candidate for decapitation, as well as others near the bottom of the list.

## The Evolution of Beekeeping Practice

BY G. S. DEMUTH

(Continued from May)

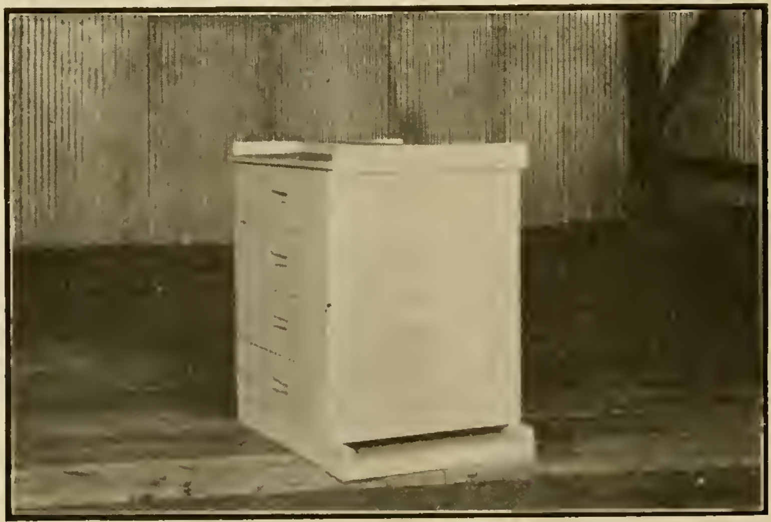
In December, 1885, at the Detroit convention, Mr. Heddon announced the new Heddon hive and his book, "Success in Bee Culture." The new Heddon hive was designed especially to meet the requirements of the contraction system. The length and width remained the same as the 8-frame Langstroth hive, but the depth of the frames was reduced to 5⅜ in. in order to make eight of these shallow combs equivalent in capacity to five Langstroth frames. It was advised that two of these shallow brood-chambers be used during the six weeks preceding the honey flow for the strongest colonies, but at other times the brood-chamber was contracted simply by removing one of them. Colonies not strong enough for two sections of the brood-chamber during the building-up period were to be left on the one.

Thus was accomplished the second step in the reduction of the size of the brood-chamber since the days of Langstroth and Quinby. The concontractionists were using a hive much smaller than that of which Quinby wrote, as quoted above: "Very satisfactory for the first summer, but in a year or two your little hive is gone."

Mr. Hutchinson was so enthusiastic in regard to these new ideas in comb-honey production and so apt as a teacher that he rapidly came to the front as a leader. He began the publication of "The Beekeepers' Review" in 1888, and the pages of the early volumes of this journal are replete with the new comb-honey methods. At that time each issue of "The Beekeepers' Review" was devoted to a special topic in beekeeping. The December, 1891 issue was devoted to the subject, "What Shall We Do if Poor Seasons Continue?" As was his practice, the editor wrote a "leader" for the preceding issue, part of which I quote: "In 1888 the average yield in my apiary was 10 pounds per colony. In 1889 it was 20 pounds, in 1890 not one pound, in 1891 5 pounds. * * * The honey stored in my apiary the past four years would not have kept us in food more than one year. I am forced to believe that hundreds of beekeepers could make a similar report." After some remarks about some changes in his location which had been brought about by better agriculture, he continued: "What puzzles me is that we had good crops for ten years, then poor crops for four years. It seems as though the change ought to have been more gradual."—(The Beekeepers' Review, Vol. 4, pp. 298-299). Ten years later Mr. Heddon told me, in person, in his own apiary, that he had given up all hope of securing another crop of Honey in Michigan, since there had been a series of poor seasons in his locality the past fifteen years.

Among the contributed articles on the remedy for poor seasons was one by R. L. Taylor, the closing paragraph of which follows: "I will close with the suggestion of one other possible remedy. In my home apiary the past season I had one swarm for about every twenty-five colonies, an average of about 5 pounds of comb-honey to the colony. But there was one colony that cast a swarm and gave a surplus of 75 pounds of comb-honey over and above sufficient winter stores for the two colonies. * * * * There was no accession of bees from other colonies nor any robbing. Wherein was the power of this colony? Was it from the fortuitous conjunction of conditions at the most favorable times so as to produce extraordinary exertion at the nick of time? Did it possess a secret knowledge of some rich acre of clover in a sunny nook? Or was it possessed of inbred characteristics which gave it power to excel? If in the first or last, as seems most likely, we have in them a rich field for explanation. He who finds out how to time the conjunction of conditions and to perpetuate the most desirable characteristics will abolish poor seasons, not simply find a doubtful remedy therefor."—(Beekeepers' Review, Vol. 4, p. 323). Taylor here uttered a prophecy well worth a most careful study by any beekeeper, and which in the light of our present knowledge helps to explain the series of poor seasons in the clover region and the decline in beekeeping in that splendid honey producing area.

I do not mean to infer that a reduction in the size of the brood-chambers was the sole cause of the poor crops secured at this time, but the reduction of the size of the hives certainly rendered the maintenance of the colonies in a prosperous condition much more difficult, especially during adverse seasons. The reduction of basswood and the growing importance of alsike clover made it necessary to have the colonies strong much earlier than was previously necessary when the colonies built up on white clover and secured a crop of surplus honey from basswood. That the failures were not so much the fault of the seasons as that of management is suggested by Mr. Taylor the very next year, 1892, as follows: "In the leanest of the late lean years every colony that cast a swarm as soon as the first opening of the white clover has given me more than an average amount of surplus comb-honey, and by that I mean more than an average in good seasons. For it has come to be a fond dream of mine that all reasonably good colonies having good queens can be brought to the swarming point by that time."—(The Beekeepers' Review, Vol. 5, p. 267). Here Taylor sees the possibilities of a "conjunction of conditions" designed



The divisible hive composed of shallow frames was advocated by Heddon, and for a time was quite popular. Beekeeping rapidly declined in Michigan after this hive came into general use.

by the beekeeper instead of the former "fortuitous conjunction of conditions."

Fortunately, the experiment in the repeated reduction in the size of the brood-chamber was not conducted without a check. Some beekeepers produced extracted honey throughout the comb-honey era, retaining the original brood-chamber capacity. The most prominent among the defenders of the large hive was Charles Dadant. In the early days of the movable comb hive he had adopted the Quinby hanging frame, but instead of using eight frames, as advised by Quinby, he built his hives to hold eleven frames. In 1874 he wrote: "For six or seven years I have tested the laying ability of my Italian queens. For this purpose all my hives destined to produce honey have been made with a capacity for eleven Quinby frames, or, if American, sixteen. * * * * By the first of June three of my Quinby hives had between seventy and seventy-five thousand cells containing brood, while the best of my Americans had about ten thousand cells of brood less. Yet both kinds had equally young and prolific queens, the same pasture and the same care." —(Gleanings in Bee Culture, Vol. 2, p. 29). This amount of brood, as combs are ordinarily filled, would be twelve to fifteen Langstroth frames.

The Dadants, being producers of extracted honey, have continued the use of this hive. They fought consistently against the reduction in the size of the brood-chamber, which was brought about during the comb-honey era. From 1885 to 1899 the discussion of large vs. small hives continued, in which Charles Dadant and C. P. Dadant defended the large hives in opposition to the comb-honey producers. In 1895 A. N. Draper proposed a modification of the Dadant-Quinby hive, which is now known as the Jumbo hive. About this time E. R. Root was advocating the use of the two-story, eight-frame hive, since the eight-frame was then standard. As a result of all this discussion there began a tendency toward increasing the size of the brood-chamber.

During the comb-honey era many improvements were made in hives and frames, practically all of which were comb-honey requirements. The thick top bars, self-spacing devices, as well as many other improvements, were designed especially for the comb-honey hive. Furthermore, a standardization of hives and frames used in this country was practically accomplished during this era.

### The Second Extracted Honey Era

The Federal Pure Food Law was passed June 30, 1906, ushering in a new era in beekeeping. We are now in the early morning of the second era of extracted honey production which promises to be the brightest of the eras in American beekeeping. It is no longer necessary to sell with the honey the combs in which it was stored in order to convince the consumer of its purity, since, under the Federal pure food law and the pure food laws of the various States, this is now done by means of a label. Extracted honey production has increased by leaps and bounds since the passage of this law.

The new era of extracted honey production began after the beehive had been standardized and we have plunged into the midst of extracted honey production, using a hive designed for comb-honey production. In closing it may be well to mention at least one of the difficulties involved in using a comb-honey hive for extracted honey production. The ten-frame Langstroth brood-chamber is now admitted to be too small for the complete development of the colony previous to the honey flow; therefore, two brood-chambers must be used for brood-rearing at this time. If the second brood-chamber is given on top the queen usually goes into it, but often fails to go down again, thus abandoning the lower brood-chamber, the combs of which are partially filled with pollen as the brood emerges. When the second story is filled with brood and honey the queen may go into the next super above, abandoning both the first and second stories. In other words, no matter how many hive-bodies are used, the queen is often partially confined to but one of them at a time, with a tendency to go upward into the supers, abandoning in turn each brood-chamber, if the queen excluder is not used. If in building up previous to the honey-flow a second hive body is placed below, the queen often fails to go down, and she may become sufficiently crowded for further brood-rearing room that a tendency to swarm is developed in the colony before the queen finds the combs below.

With the horizontal wiring of the frames it is difficult to overcome the stretching of the cells just below the top bar of the frame unless all of these cells are used for brood-rearing the first year, thus reinforcing the wax cells by means of the cocoons. When there is one or two inches of comb adjacent to the top bar that is unfit for brood-rearing on account of misshapen cells, we are asking too much of the queen if we expect her to pass freely both up and down, past spaces and sticks and finally across the imperfect comb to find cells in which to deposit eggs.

This trouble may be overcome to a large extent by carefully sorting the combs, using in the brood-chamber only those which are strengthened by cocoons to the top bar. Inverting the frames, the first year they are used, results in a reinforcement of the upper portion of the comb if brood is reared in them to the top bar, which is at the bottom when the frame is inverted. Some better method of wiring the frames may be developed by which sagging of combs may be overcome. Dr. Miller supports the foundation in his frames by means of wooden splints to overcome the tendency of the combs to sag. He also secures combs built down to the bottom bar by using wider foundation, which extends down between the two halves of a split bottom bar. He thus eliminates the barrier formed by the usual space between the comb and the bottom bar of the frame as well as the barrier formed by misshapen cells in the upper portion of the comb. He reports that his queens pass readily from one hive-body to another.

If the same sized frame is to be used for both the brood-chamber and extracting supers, the Langstroth depth is probably a fair compromise. Extracting combs deeper than the Langstroth would be objectionable in supering and in extracting, and brood combs shallower than the Langstroth would be objectionable from the standpoint of brood-rearing. Unless something can be done to overcome the tendency of combs to sag, as they usually do with horizontal wiring, beekeepers may again return to the deeper frame for the brood-chamber and use a brood-chamber large enough that a single story is sufficient, since in such hives the barrier formed by misshapen cells in the upper portion of the comb does not limit the activity of the queen, but may be utilized to the advantage of the beekeeper as an obstruction to check the tendency of the queen to enter the supers.

Washington, D. C.

The eight-frame Langstroth hive and Dadant hive compared

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# THE EDITOR'S VIEWPOINT

Dr. Miller's health is better and he is going to reply to some questions himself. Bear in mind that he does not reply by mail to enquiries. Do not send questions which require too lengthy an answer. Before you ask a question, make sure that a similar question has not been already answered in the numbers of the Journal which you have.

## Buying Package Bees

We have a letter from a reader who ordered packages of bees from a shipper in one State and queens from a breeder in another. Instructions were given as to the exact date of shipment, so that bees and queens were expected to arrive at the same time. The bees were shipped on the date specified, but the queen breeder wrote that because of unfavorable weather he was unable to send the queens. As a result the bees in the packages were almost a total loss. As the queen breeder had been notified in advance that package bees were to be shipped at this time he should have made an extra effort to fill the order to save loss to his customer.

However, this should serve as a warning to any beekeeper never to buy bees, without queens, unless certain in advance that he will be able to supply them on arrival of the packages. In a case of this kind, the failure of either the package shipper or the queen breeder to fill his orders on time will result in loss, since neither bees nor queens are of use without one another. So many things can happen to prevent shipment of bees or queens on a certain date that the only safe way is to buy both from the same shipper, or be able to supply the lack at home. Bees travel more safely with queens, anyway. They are certainly better satisfied and less restless.

## Don't Extract Too Closely

It looks now like sugar would be very scarce and high in price this year. It behooves every beekeeper to make sure that plenty of honey is left in every hive to last until the next season, before finishing extracting. The beekeeper who extracts and sells all the early honey and depends upon a later flow to support his bees may find himself unable to get sugar to supply the lack of the flow that fails and lose his bees from starvation. **Don't extract too closely.**

## Queen Introduction

The time is at hand when many beekeepers are ordering queens from breeders and preparing to introduce them. We wish to warn beginners against the practice of removing the old queen to be replaced, several days ahead. We received a complaint lately of a beginner who was very much disappointed because he had not received the queen ordered, at the exact date he had set. He had removed the old queen from his hive in anticipation of the arrival of the other. The bees had reared queen-cells. Of course that is what we should expect. Then they would be less likely to accept a new queen, since they realized fully that they were queenless. They would prefer to rear a queen from their brood, and we would have to wait till they were **hopelessly** queenless before they would willingly accept a new one. But if we remove the old queen immediately after receiving the one which is to take her place and put her in the introducing cage for an hour or two before making the exchange and putting the new one in, the bees are not queenless a single minute. They are more willing to accept the new one. The only thing that may militate against her is the possibility of her being so fatigued from the trip that she may be considered by the bees as losing her prolificness. That is why a queen, transferred from one hive to another will always be accepted more readily than a tired one which has been fatigued by travel, especially if the new one has acquired some strange odor.

Another advantage in keeping the old queen in the hive until the new one is at hand lies in the briefness of the suspension of laying. That is why the introduction by the smoke method would be very valuable if there were not so many failures in it. The cage method, with 24 to 48 hours of confinement, is the safest.

The introduction of queens during the honey crop and at hours when the old bees are in the field is always more likely to be successful than introduction in a time of dearth, or in rainy weather, when all the bees, old and young, are at home.

Nothing, to our mind, is more dangerous than the presence of robbers around a hive in which a new queen has been introduced. It irritates the bees and causes them to mistrust every bee they meet. If the odor of the new queen is still a little strange to them, they are likely to treat her as a stranger. That is why practical beekeepers advise the beginner not to open the hive for 3 or 4 days after the queen has been introduced. After that time she has begun her laying and is looked upon with respect and tenderness. However if we should delay examination as long as 3 weeks, the new queen might have been killed and replaced by a young one and we would not know it, unless she had been clipped or bore some distinguishing marks.

## The Honey Extractor Useless

In "L'Apiculteur" for April, a writer asserts, page 91, that experiments have "reduced to nothing the claim of the honey extractor to an increase of honey crop." This same man, a few years ago, in the same magazine, held that the use of the honey extractor was not practical The thousands of American beekeepers who use this machine will be very much astonished at this amazing revelation! They will wonder whether this writer thinks himself practical.

## Defending Themselves Against Robbers

Bertrand, in his "Conduite du Rucher," wrote, page 53: "The Italians and especially the Cyprians, defend themselves better than common bees against robbers; Carniolan bees are the least expert of all, it is their principal defect."

## Queen Matings

"Current Opinion" for May has an article on "The Tribulations of the Queen Bee in Finding a Mate," with a very good cut of a comb of brood and honey. This is taken from "The New Statesman," of London. and gives some English views upon the subject. Technical articles, like this, in the magazine press, often contain gross inaccuracies. But this is a good statement.

There is, however, an assertion made that "if England is being turned into a land of cross-bred bees today, it is because the black drone is fastest on his wings." Has this been positively ascertained? Or does this English writer fail to take into account the much greater number of black drones in his vicinity than of the Italian or other foreign breed? Unless this has been actually tested—a rather difficult test—comparatively, I suggest that matings occur among queens and drones much farther apart than is ordinarily believed. In the early days of Italianization, here, some 50 years ago, I often found the black queens of farmers, 4 and 5 miles away, producing hybrids; showing plainly the range of flight of our Italian drones.

### Utah Honey

The first annual report of the Inspector of Apiaries for the State of Utah, Mr. F. B. Terriberry, shows an estimated honey production for that State, in 1919, of 2,221,710 pounds from 37,627 colonies, or an average of over 59 pounds per colony.

### Wintering Bees in Kansas

We have received a copy of Dr. Merrill's Notes on the Value of Winter Protection for Bees." The experiments made at the College on six hives are quite conclusive. The colonies were in single-story unpacked colonies, two-story unpacked, and packed colonies. Half were with windbreaks, the others without. The packed colonies consumed the most honey, but also reared the largest amount of brood and were in best shape in spring. The single-story unpacked hives consumed the least amount of stores, but were in the worst shape in spring. The conclusion is obvious that packed colonies, well sheltered and well supplied with food, bring the best results.

### Another Use for Propolis

"Nahla," of Algiers, of March, 1920, quotes the following from "Petit Almanach des Abeilles":

"I used to wax my mustache—which is ordinarily hanging down—with a liquid sold in a small vial at the cost of 39 cents. What were the components of this liquid? A perfumed resin, dissolved in a little alcohol, as my brother beekeepers undoubtedly know. At present, I take some propolis, the odor of which is very pleasant to me, and which my bees furnish free of charge. I dissolve it in a fourth of a pint of good alcohol. I strain it and use it in lieu of the famous mastic. I obtain for 6 cents the value of $2 of mustache wax.

The same magazine recommends, for the removal of propolis from the hands, the use of either turpentine, alcohol, benzine, petrol, or even Eau de Cologne.

### Bulletins on Foulbrood

Three more bulletins have lately been published by the Department of Agriculture, of importance to beekeepers: "European Foulbrood," Bulletin No. 810, by Dr. G. F. White, with 8 plates, contains a very thorough description of the phases of the above named disease. A synopsis of this will be published in our columns soon.

"A Study of the Behavior of Bees in Colonies Affected by European Foulbrood," Bulletin No. 804, by Arnold P. Sturtevant specialist in bacteriology of bee diseases. He shows a number of experiments, and his conclusions are that European Foulbrood is mainly a disease of weak colonies. This tallies with the experience of practical beekeepers.

"Control of American Foulbrood," Farmers' Bulletin No. 1084, by Dr. E. F. Phillips, apiculturist in charge at the Bureau of Entomology. This is a 16-page bulletin which contains the most important things to be known on this disease by the specialist in beekeeping. It shows the appearance of diseased combs and gives the best treatment so far known.

Each of these bulletins should be in the hands of the beekeeper who is interested in abolishing foulbrood. Let me repeat that I kept bees for 42 years before I saw a sample of foulbrood. There is no reason why we cannot get rid of these diseases so as to make them as rare as they were 30 years ago.

### Minnesota Experiment Station

The management of the University Farm Apiary at St. Paul has undertaken the furnishing of choice queens in limited numbers to the beekeepers of the State. They now publish a circular announcing that the price of these queens is raised to $1 for untested and $1.50 for tested. They can send only a limited number, filling orders in rotation. These are, of course, much below cost.

The statement is made, also, that the winter losses in Minnesota are around 40 per cent, this year.

### Weight of Bees

As far back as 150 years ago, experiments were already made on the weight of bees. Wildman (1770) writes:

"On the 9th of March, 1768, being a very cold day, I took some bees out of a hive and suffered them to fly to a window which so chilled them that they fell as dead. Of them I collected as many as weighed half an ounce, and found the number to be 154, which gives, to the pound, 4,928. I weighed another half ounce and found the number to be the same."

He also quotes another author who weighed dead bees and found 5,366 in a pound. The difference in weights was evidently due to the latter being dry and entirely deprived of honey.

### The Metric System

The standardization of the metric system is strongly urged just now. But too few people know anything about its simplicity. On the contrary, most people think it very intricate. It would simplify our children's labor ninety per cent. Andrew Carnegie and Roosevelt urged it. Edison, Burbank, Ford and Pershing are all advising it. It is used by men of science everywhere. We need it in our dealings with South America.

### The Dismal Swamp for Beekeeping

Having read in the Literary Digest a mention of the geological survey of the Dismal Swamp, with mention of its flora, we wrote the U. S. Geological Survey for a copy of the Bulletin. It was sent to us with a very courteous reply stating that the report was no longer available for distribution, but that they were sending us one of the few reserved copies.

The description of the flora of the Dismal Swamp is disappointingly brief. But it is sufficient to show that there may be some chances for bees in that vicinity. The trees and shrubs upon which bees could gather pollen or honey, or both, are the following: Water ash, Rattan **(Berchemia scandens)**, yellow jessamine, cotton and water gum **(nyssa)**, red maple and sweet bay **(Magnolia)**.

Have any of our readers any knowledge of practical beekeeping in the vicinity of the Dismal Swamp?

The Bulletin in question treats mainly of the production of peat.

### Franco-Belgian Funds

The Franco-Belgian Committee met in Paris early in April and ordered one-third of the supplies sent to Mr. Tombu at the Department of Agriculture of Brussels. The other two-thirds were ordered, one-half to Paris, the other half to Nancy, to be divided between the eastern and western regions.

Mr. Crepieux-Jamin, of Rouen, who is an active member of the committee, writes us:

"You may report to your committee, Drs. Miller and Phillips, that those subscriptions will give us the opportunity of doing much good. Say to them that we are very thankful. The distress in the devastated regions can hardly be conceived, for one cannot imagine such continuous masses of ruins, on such an extensive scale. You may have an idea of a part of it, but the total is overwhelming. It takes real courage to bear the sight of it and one is filled with admiration for the good people who struggle in those stony deserts, where the meanness of some human beings has destroyed everything. All that we may do is insignificant by the side of what will remain to be done; it will take 15 or 20 years to revive those regions, if they ever succeed. But the inhabitants do not lose heart, and they seem to have even more courage than the visitors. They want to live; they want to rebuild their homes; they deserve to be helped. I am very happy of having the privilege of adding ever so little to this rebuilding."

The above-named gentleman is too modest to speak of what he has already done. But the French and Belgian magazines report him as being the first civilian rewarded by the King of Belgium with the Order of Leopold, for services rendered. During the war he gave medical assistance to more than 3,000 wounded Belgian soldiers. Beekeepers may be proud of his being one of their number.

There is still more room for help. It is never too late to do good.

One lot of 56 smokers has been sent, also. Six of these were subscribed by J. W. Bittenbender, of Knoxville, Ia.

### Space Between Combs

Cowan advises spacing frames "a shade under 1½ inches from the septum or middle of each pair of combs." (Page 26 of British Beekeeper's Guide Book). For wintering he spaces them farther. He writes:

"There should be sufficient bees to crowd eight frames, and these should be placed 1¾ inches from centre to centre, for the winter months . . . " (Page 181).

## Perfect Wiring of Combs

By W. L. Gray

I take the smallest shoe-lace eyelets that can be obtained and place one in each hole of the end bars, driving it down with a hammer. First it is necessary to enlarge the holes some, which I do with brace and gimlet, holding five or six of the bars together and boring through them all at one operation, which lessens the work. If tight wires—wires that will stay tight indefinitely—will prevent sagging combs, then this way is all that is necessary; besides, it makes a very neat job. You will readily see that the wiring machine will do better work, also the wire will not bind nearly so much where it passes through the holes. The end bars can be sprung in and they stay in that position.

Might this not be the solution of this problem, if the manufacturers would devise a machine to insert the eyelets at the factory when the frames are made? I believe that extensive beekeepers would be willing to pay a little more for a frame like this.

I also think that a larger size wire than a No. 30 should be used, say one with twice the cross-sectional area, No. 27. This way, when using the wiring machine, faster work could be done, as it would not be necessary to be so careful about breaking wire.

Wisconsin.

(This method is similar to that described earlier by Deroy Taylor, of New York. There is no doubt that loose wires would be largely prevented by such eyelets and that, therefore, the sagging of foundation would be minimized. So far no manufacturer has seen fit to place such frames with eyelets in the side bars on the market.—Editor.)

## Wiring Foundation

By J. B. Douglas

I have tried all kinds of wiring and find only one way suitable to the bees, just four straight wires, and they must be tight and stay tight. As soon as I found they would not stay tight I began to look into the cause and found that the wires cut into the wood.

I bought 12,000 shoe eyelets of the smallest size; they cost 4c per 10-frame hive. I drove these eyelets in the holes already in the end bars; that is all there is to it. Wires never cut into the wood and never get loose any more, and the wires just run through the little eyelets like they were greased. What do you say, Dr. Miller?

Now there is another little kink. I use a wiring machine (of my own design) to crank the wire up tight. I pull the top wire down in the center. It is necessary to do this for two reasons; it forms a truss, and by pulling it down it takes all the slack out of the second wire. I next roll in the bottom wire; this time I draw it up in the center. That takes up the slack in wire No. 3. Also it takes all the buckling out of the foundation. Then I roll in wires 2 and 3, leaving them straight. **When wiring frames use shoe eyelets.** That is all there is to it. There has been many a page written about wiring and all that has been written did not tell as much as these six words.

Arizona.

## Wiring

By A. F. Bonney

Having read about all that has been written on wiring which has appeared in the journals, I have yet another idea to offer which, while only a modification of other methods, has, I think, some redeeming features.

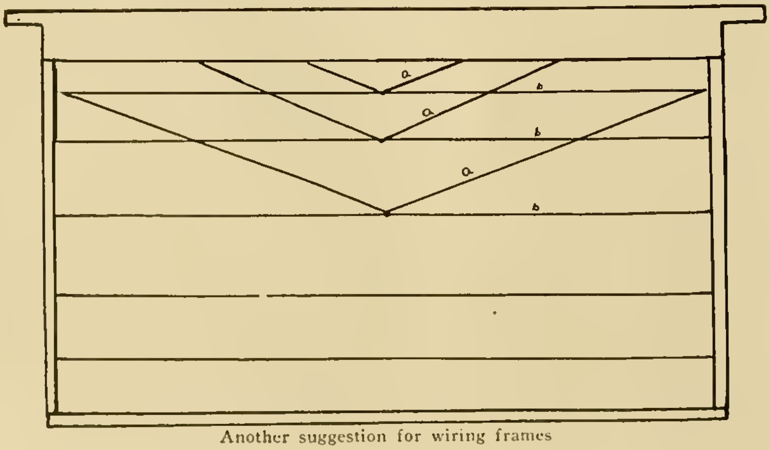
Is there anything in the many methods of wiring offered which will insure stability of the combs? If we use vertical wires, will not the combs, in a hot hive, be apt to slip on them, not much, to be sure, but one-sixteenth of an inch is enough to destroy a cell, or a row of them.

Where the wires are not vertical, but run obliquely across the frame there would be less danger of displacement, because such a wire will not sag as much as a wire running parallel, and this parallel wire is the one to be supported, and we give it but little help by putting in another (oblique) wire unattached to it.

I had in mind to solder the wires where they cross, which could be made a simple matter, by using a soft solder, something like the Wolf metal, a mixture of tin, lead and bismuth, which may be so combined as to melt at less than the boiling point of water—212 degrees. The soldering could be done by the aid of electricity, and the job finished very quickly.

I think the plan I offer will insure the best of results, with the wires either soldered or left free. The wires (aaa) pass under the wires (bbb). In case of the first and, maybe the second wires, two such supports might be used, if necessary. I think it unlikely that the fourth wire from the top will need support. It will be easy to add one for experimental purposes.

Iowa.



Another suggestion for wiring frames

## Arrangement of Colonies in the Apiary

By the Editor

"Just how close to each other may one safely place a number of colonies? I have a number, and as my space is limited I want to place them close together. Is it also necessary that they all face the same direction? I believe that I have read that they should not be placed too close, but I have seen pictures of large apiaries where the ground seemed to be literally covered with hives."

Missouri.

There are few points in beekeeping upon which leading and practical men agree so well and yet fail to follow the advice which they give. The placing of colonies in long, uniform rows is generally deprecated, because of the danger of losing the queens on their return from their wedding flight. Yet we follow this method more or less ourselves.

Mr. Langstroth wrote:

"If a traveler should be carried in a dark night, to a hotel in a strange city, and, on rising in the morning, should find the streets filled with buildings precisely like it, he would be able to return to his proper place only by previously ascertaining the number, or by counting the houses between it and the corner. Such a numbering faculty, however, was not given to the queen-bee; for who, in a state of nature, ever saw a dozen or more hollow trees or other places frequented by bees, standing close together, precisely alike in shape, size and color, with their entrances all facing the same way, and at exactly the same height from the ground?"

This criticism is correct, and more queens are lost, in a large apiary, from the young queen returning to the wrong hive, than in any other way. We often hear people who buy Italian queens saying that their bees are often seen in the wrong hive, and they imagine that the Italians make more mistakes of this kind than the common bee. This is not so. But we notice it more when Italian bees make their home in a hive of blacks. The young bees and the young queen, at their first flight, aim to recognize their home. But, as Mr. Langstroth suggests, they have not the faculty of counting the number of hives from a certain point, and so are in danger of entering the wrong hive. It matters little to the worker bees who, when they make a mistake, are likely to be welcome anyhow, if they come as friends with a loaded honey sac. But in the case of the young queen, if the hive she enters is queen-right, this mistake costs her her life.

In an apiary where the rows of hives are shaded by trees, where a bush here and there divides the flight, there is less danger of mistakes. Each colony takes its own direction of flight, to get out, from the shade into the open. Thus there is little danger of errors, especially if the hives be painted of various colors. Some say that this has no influence. Yet, if you remove the hive and transfer the bees into another of very different color, you will notice many bees hesitating, though they may come back directly to the identical spot.

It takes but little to enable a bee to orient itself, or in other words, to find its bearings. If two hives are placed in closer proximity than the others, this will direct the bees of both these hives and of their immediate neighbors. Mr. Scholl, of Texas, has a way to place the colonies in groups of five, not in regular rows, so that none of the bees need hesitate after once learning the location of their home. A stump, a shrub, a clump of grass, a slightly different roof to the hive,anything, in fact, which will enable the bees to see a difference, is usually sufficient to mark their home in their memory. The relative position of the hive in reference to other objects, is so well noticed by the bees, that the moving of it only a few inches is noticed by them. But in an open expanse, where there are no guiding marks whatever, a hive, if alone, may be moved several feet without its change of location being noticed by the bees.

A large apiary may be placed in a very small compass, without much loss of bees. I have seen about 160 colonies, in a model apiary at Maquoketa, Iowa, located on a space of ground which measured only about 50 by 65 feet. Most of the colonies faced south. But they were arranged in irregular rows, some being close together, some farther apart, two hives being generally placed very close together, with a greater space between them and the next. Long rows, with exactly uniform spacing, are most objectionable.

As to the directions in which the hives should face, we have faced them in all directions and have had good success in every direction but the north. It is better that the hives of each row should face in the same direction, if possible, as there is more comfort in handling the bees. When we pass in the apiary, we prefer to pass behind each row. If we pass in front, there is more danger of disturbing the bees or angering them. Two rows might be placed back to back with sufficient room between them to enable one to do all the manipulations. In that case we would face one row east, the other west. In apiaries located on a slope, we want the bees to face down the slope. It is easier to keep the hives level, and if they are not level they will slope forward, which is not objectionable.

We do not like to tier up the hives, though we have seen this, often, in house apiaries, especially in Europe. Not that there is danger of the bees shifting from the upper to the lower row, but because the manipulations are much hindered, unless a passage for the apiarist be also made higher up, to readily reach the second row. In some parts of Switzerland and in Central Europe, they tier the hives two and three stories high. But they allow room for only one super for each tier. Those people have no idea of what a large crop of surplus honey represents, and we cannot imagine the harvesting of 200 pounds per colony with such a system.

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## Odor of Bees

I found the following interesting little article in the January number of The Ladies' Home Journal, and thought it might interest others:

"Recognizes Bees By Their Smell.—Dr. N. E. McIndoo, of the Smithsonian Institution, after a few months' practice, is able to recognize the three castes of bees—queens, drones and workers—with his nose alone. He is also able to distinguish the hive odor (distinguishing one colony from another), the brood odor, or smell of the larvæ, the honey odor, and the wax odor. He believes that the bees themselves recognize the odor of each individual bee, and that this is the way in which they tell one another apart in the dark hive."

I think Mr. McIndoo has a nose 50 times more sensitive than mine, or this is a fish story.

Iowa.

(Without doubt, each of the three kinds of bees has a special odor. Swammerdam wrote that if you enclose a number of drones in a small box they emit a strong odor, which he called "aura seminalis." He thought the queen was impregnated by this scent. The workers undoubtedly recognize the odor of the hive and the odor of their queen. But we have never tried to recognize whether a hive is queenright or queenless by the odor. It would require a nasal organ as powerful as that of a well-trained dog.—Editor.)

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## A Ford as a Wire Imbedder

Edward A. Winkler, of Illinois, rigged up a wire imbedder, using his Ford as a source of current. The picture shows him at work. He made two frame blocks on a box, using a half-inch board 7½x16½ to support the foundation.

He took two insulated wires to furnish the current, connecting one to the terminal attached to the horn and the other to the engine. He ran the motor at a speed equal to about 20 miles per hour, using less than two gallons of gasoline for 1,000 frames. The current was applied by means of touching the two wires at opposite ends of the wires in the frames. By this means he was able to imbed as many as 210 frames in an hour. This draws heavily on the magneto of the car and it is sometimes necessary to use batteries to start the car for a time after using it as a wire imbedder. A few hours driving on the road soon recuperates it, however.

Mr. Winkler no longer uses the Ford, as he now has access to electric current.

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## Imperfect Mating of Queens

By Arthur C. Miller

Professor Anderson's remarks on "Imperfect Mating of Queens" (A. B. J. April, 1920), together with several by Mr. Sladen in Gleanings and the A. B. J., give food for thought and suggest that other experiment stations beside the Canadian one might devote some time and money to researches along this and kindred lines.

Edward A. Winkler using his Ford as a wire imbedder.

It is work that the average beekeeper has neither the time nor the training to successfully undertake.

Some experiences and observations of my own may be worth recording, though I do not pretend to have gone into the matter exhaustively, but even so, the facts may suggest other lines of observation for others to follow.

My "Home Yards" have always been on a narrow peninsula of land lying on the easterly side of Narragansett Bay. From 1880 till 1888 the yard was on the easterly side of the peninsula, from 1888 to 1891 it was on the westerly side, within 100 yards of the shore, from 1891 to 1910 on the easterly side again, and since then on the westerly side, about one-eighth of a mile from the shore.

During the summer months the prevailing winds are from the southwest and blow pretty strongly. There is no protection from the winds on the west shore, but a narrow and low ridge more or less tree-covered extends down the middle of the peninsula and gives fair protection to the east side. While my yards were on the east side there was little loss of queens in mating and "poor" queens, those which laid poorly or failed young, were rare. But on the west shore the loss of queens and poor queens always have run high. The results are about the same for large as for small nuclei.

Some years ago I discovered that some queens mated more than once before they began to lay. Observations of two matings were not infrequent, and on two or three occasions three matings were noted. In such cases the first mating usually occurred fairly early in the forenoon and the subsequent mating or matings before late afternoon. On the west side of the peninsula queens seldom fly after 1 o'clock, because the winds come in cold from the water and are strong.

In only one case can I speak positively of a queen mating the second time, on the day following the first mating. In that case the first mating took place late in the afternoon and the second one early the following forenoon.

From these observations I am led to believe that it is at least not uncommon for queens to mate more than once before they begin to lay. As further proof most beekeepers of any considerable experience can recall queens of pure parentage which produced two distinct types of workers, one typically pure and one distinctly different. Offspring from a crossing of pure parents of mixed blood are of all sorts.

Mr. Sladen's observations, as well as those of Professor Anderson and myself, seem to indicate that some drones are not virile, or that for some at present obscure reason one mating may not so fill the spermatheca as to bring to an end the mating impulse of the queen.

There is much difference of opinion as to how the drones find the queens, some asserting it is by odor, others that it is by sound, and I am among the latter, and I think I have good reasons for so believing, but I am ready to listen to all the others have to say.

Professor Anderson's remarks on drones recall some experiences which may properly be related in this article, namely, that drones "drift" with the wind and seldom fight against it. On the peninsula above referred to I have always known of every colony, its location and its strain. Whenever blacks or hybrids were southwest of my yards, mismatings were common, but when they have been north of my yards, mismating was rare. And this statement holds good where the alien stock has been nearly a mile southwest and as near as an eighth of a mile north. This, of course, at different times. Henry Alley always maintained that queens mated within a few rods of the hive they flew from.

What do we **know** about bees, anyway? The late Mr. E. E. Hasty used to delight in saying "Bees do nothing invariably."

Rhode Island.

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## A Deep Frame

Your recent deep brood-nest discussions in the Journal have interested me greatly. I wished to secure Nature's ideal of a deep brood-chamber, while still employing my small Langstroth size extractor, supers, etc., and this is how I set about it: I made up 100 new frames of the usual Langstroth dimensions, but with the top bars placed at one of the ends instead of lengthwise, as now manufactured. This gave me a frame 8¾x18¼ in. over all, with top bars 1x1x10 in. long and having 1½ in. spacing. In the center of a brood-chamber of standard Langstroth width and length and suitable depth I placed twelve of these frames, double walling and packing the unoccupied space on either side of the row of frames so that I could readily use any sort of Langstroth supers, etc., on top.

The first year everything was of 10-frame width, but not being strong physically, I gravitated by degrees into 8-frame equipment, where, so long as my present light changes not, I feel disposed to remain. I like the simplicity and success of my venture well. But now I should value not a little your friendly criticism of what I have done.

Ontario.

Answer—Judging by the diagram which accompanied the letter, the supers are to be placed horizontally over the top of the hive body, jutting out over the double-wall packed ends.

The combs standing on end are upon the idea given by Mr. Demuth, with the purpose of giving the bees a greater amount of honey over the cluster for winter. Probably the greatest objection that I would find to such a hive would be the possibility of the bees disliking to work in the jutting-over spaces at both ends.

Of course, I would not want to adopt this hive for my own use. But neither do I advise anyone to change from the style which he now uses, if he is successful. As to the man who is not satisfied with the style he has, it is for him and for his benefit that all these discussions are raised. Personally, all I wish is to answer the questions which are raised from time to time of how we succeed and why. With us, the theory follows the practice and does not precede it. It seems to us a much safer way than to have the theory first, and the practice afterwards.—C. P. D.

View of a French apiary

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## Florida Apiary Near Toulouse, France

To cast one's eyes over the picture of this apiary is enough to draw inferences which will not be to the advantage of the arrangement. Other defects, less evident on the photo (but I am well placed to know them), require an explanation.

First, its recent increase did not give me time to ascertain whether the number of colonies is too large, considering the importance of the crop. For a few years past, in the south of France, the harvest has been light. On an average, perhaps 40 colonies would be enough for this location. Yet, during a good honey flow, when the white locust—abundant here—is a success, the apiary could sustain 200 colonies without overstocking. But it is prudent to reckon with middling years instead of exceeding ones.

Secondly, the apiary, notwithstanding its shelter from cold winds, is too much exposed to the **autan** or African sirocco, cooled sometimes in crossing the Mediterranean. Some years, particularly, it blows for 8 to 15 days continuously, obstructing the work of the bees.

Thirdly, the sun reaches the hives only till about 4 o'clock in the afternoon, as the slope is to the northeast. I have outapiaries in warmer expositions where the breeding is earlier by a month. Lateness is a great handicap, because our main flow comes by the 25th of May. There is also too little shade.

Another disadvantage is the variety of styles, though the majority are in Dadant hives. There is, however, a compensation to this, as it allows of more experiments.

The name of the apiary is after the French-Latin name of blossoms, not after a State of the United States.

You will ask why, with so many drawbacks, I do not attempt a reform. It is because, of several inconveniences I choose the least.

V. DUMAS.

## Observing Hives

A Letter from the Ames Experiment Station

Mr. C. P. Dadant, Editor American Bee Journal, Hamilton Ill:

Dear Friend:

You may be interested to know that a one-frame observation hive in my office contains a little colony which bids fair to winter through. I left them there just to see what the result would be, little thinking that there would still be any bees left by the last of January. The colony lost two or three hundred bees along in December, at the time of the cold weather and coal shortage, when the temperature in the room got down close to freezing. They had a good flight the last of December and a fairly good one again today (Jan. 26). The queen started to lay about the 20th of December, but only a small fraction of the eggs hatched, as the proper temperature could not be maintained. About 50 or 75 young bees emerged. The queen has ceased laying and with the flight the bees had today, I see no reason why they should not live through. During the month of confinement just ended, hardly a bee died till within the last few days, when they became a little restless, and a total of 36 bees is the loss for the month. The colony now contains approximately 1,400 bees. I am hoping now to see them alive yet in May or June.

February 2.—I had scarcely considered this an experiment, but rather as a matter of interest to me personally. As it is turning out, the prospects are that data obtained will be of more than passing interest. Should the little colony fail to live till summer, it will not be any proof that such a colony could not be carried through the winter, for I am continually making use of this colony for other experimental purposes.

Since my last letter, the queen has resumed laying. This follows immediately the flight of the bees on January 26, and may have been influenced by this, but I believe it more likely due to disturbing the colony with my experiments about the same time.

Approximately one-fifth of the young bees that have hatched during cold weather are abnormally small. This is to be expected, since proper brood-rearing temperatures could not be maintained. I notice that the other workers take special delight in tormenting the little fellows and kill them in a few days, although, so far as I have noticed, they are deficient only in size.

I made a number of observation hives last summer. They are extremely simple in construction, and I find them very satisfactory. The price of the observation hives offered on the market is almost prohibitive to the average beekeeper. If you wish, I will try to supply you with an illustration and short description of this hive some time later on, but am too busy to do so now.

Yours truly,
WALLACE PARK.

(This is interesting, and we would be glad of an illustration and description. Too few beekeepers use observing hives.—Editor.)

## Money From Bee Stings

On page 137 it appears that you have no knowledge that the formic acid of the bee is used for medical purposes. I have been furnishing bees for medical use for the last 15 years and have thought it was the formic acid they wanted. Now you find out. I am sending part of an envelope that gives you the firm's name and address, hoping you will write them. I ship to the Philadelphia address. Further, a homeopathic doctor here says he uses the formic acid in treating heart disease, dropsy and rheumatism. The way the bees are prepared, the bottles are two-gallon size, three-inch neck, no cork. One quart of alcohol in each, weighed and marked; bladder wet and stretched over the top; four bottles at a time. I am not allowed to kill the bees, for sulphur or carbon would spoil them for medical use.

I empty the alcohol out and dry the bottle to put the live bees in; use a 15-inch funnel, 3-inch neck to fit the bottle, brush the bees off the combs in the funnel, strike it lightly and they slip in; or if it's a swarm I take from a limb, I get them in a sack, tie the sack over the neck of bottle, up-end the sack and shake them in. If the bottle should be half full I turn in half the alcohol. Next time I use a dry bottle, then empty in the other until full. The alcohol kills them in about a minute. Each bottle holds about 12 pounds of bees.

Now you are wondering why I kill my bees. I don't any more, only those I get from bee trees in the fall and late after-swarms that come my way. I keep bottles on hand, some now half full. I am a farmer, not a practical beekeeper; don't have time to do much with the bees; have kept them more than 30 years. At the time I commenced bottling bees I had over 60 colonies and was working them for comb honey. I used the "T" supers with the 4-piece sections; it was too much bee work for a busy farmer. I tried to sell at $3.50 per colony first of October; no one to buy; took up about twenty; average 5 pounds of bees; got over 30 pounds of extracted honey and had the hives and combs left. Next year lost all but two colonies—foulbrood. Most all bees died in this part of the State that year, and but very few started again.

MICHIGAN.

In reply to our letter the Philadelphia firm answered as follows:

"The subject of using the poison of bees in medicine seems to become prominent in the regular medical journals every two or three years. Usually a number of articles are written telling what a wonderful remedy it is for rheumatism, and then it is forgotten. Medicine has been made from the honeybee since about 1757, and has been used by the homeopathic practitioners ever since that date. It is usually made from the

View of the home from the height of the apiary whole live bee by macerating the bee in alcohol. The action of the remedy is chiefly on the kidneys and bladder. It has been used with success by the homeopaths in the treatment of rheumatism, dropsy, eczema and various affections of the mucous membrane. The homeopathic school of medicine also uses a preparation made from the sting of the honeybee. We buy both the honeybee and the stings for medicine. At the present time we need about 5,000 stings of the honeybees, and could use about 20 or 25 pounds of bees."

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## Straw Skeps of Bees From Central France to the Liberated Regions

I am sending you two photos of bees in skeps packed in sacks and shipped to the liberated regions. There are lots of bees in the mountains of Puy-De-Dome. But they are not yet posted on modern methods. I have sold a number of skeps at 100 francs each, prepaid (about $6, at present values). But there is demand for more than we can supply. The trouble comes from the brimstoning of skeps by ignorant honey producers.

I will try and send you some photos of mountain apiaries by and by.

TOURAUD QUINTIEN,
Puy-De-Dome.

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## Bee and Queen Advertisements

By W. H. Gray

There is a great difference in the way people advertise their products, and I suppose the prospective buyers are differently affected by what they read. So my views on the subject must be taken as entirely personal. When I read over the long list of people who have queens to sell, I wish to know at a glance where they are situated; and here I must confess my ignorance. I cannot always make out the abbreviations used by the postal authorities, and the public, to denote the different States. So, sooner than worry it out, I pass on to an "ad" that tells me where the breeder lives, without the help of the atlas. It is very natural that the buyer of bees and queens should want to know the location of the sender. When other things are equal there is no use in ordering from the farthest point on the North American Continent. If the buyer in Quebec orders queens from California, or the buyer in Washington State from Florida, he knows his queens will be a long time in the mails.

Then, again, with so many good, reliable breeders, why should I have to write for the catalog of one before I can get his prices? Why can't he tell at once? And also say when he will start shipping? It would probably be all the better if he stated the other general particulars that the buyer wants to know, such as color, strain, and if safe delivery is guaranteed. Some breeders include Canada in their safe delivery, and they probably get their reward in trade. A conservative buyer might hesitate to order from a very large advertiser whose prices were about half those of the vast majority. But he might give him a small trial order, which might lead to big business later if everything was O. K.

I bought a very good queen last year for 60c, but heard later that the breeder had cleared out with other people's money. If a breeder is shipping diagonally across the continent I think he would be well advised to use the large cage, or two of the small ones fastened together with a hole cut through. In this latter way a queen came from England to British Columbia in splendid condition after 14 days' traveling.

It would be only fair to the breeder if the buyer would always return the cage with the dead queen and bees, if he expects replacement. For I am sure there are people who victimize breeders in this way, depending on him not to doubt their word. On the other hand, I have returned a dead queen and then had a letter assuring me that the queen was probably only numbed, and if I had only put her in a warm place she would have been all right. The same concern sent me a used hive, when I paid for a new one. But it is only very occasionally that these things occur, on account of the care the bee journals take before accepting doubtful advertisements, and if a scamp does get a start, he doesn't last long.

A very important thing for both parties to remember is not to neglect to answer correspondence that needs immediate attention. Openness and honesty will do the rest.

Not potatoes, but bees in straw skeps done up in rough sacks for shipment from Puy-De-Dome to the devastated regions of Northern France.

## June Tour of Western New York Honey Producers' Association to be Held June 10.

10:30 a. m.—Beekeepers will assemble at the apiary of Wm. F. Vollmer, which is located on the Akron-Crittenden Road, near Hawkins' schoolhouse, two and one-half miles north of Crittenden, three miles south of Akron.

12:00 m.—At apiary of J. Roy Lincoln, Pembroke, N. Y., in the village, on main road.

1:00 p. m.—At apiary of John N. Demuth, also of Pembroke, N. Y.

2:00 p. m.—At apiary of F. W. De Temple, Darien Center, in the village, on state road, Broadway.

. Other yards will be visited, time permitting. Demonstrations will be given at all the above named yards, and standard time will be observed.

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## Australia, the Beekeeper's Paradise

By Tarlton Rayment, author of "Money in Bees," Etc.

(Concluded)

### Victoria

THE third state to undergo review is "Vic," which is the smallest on the mainland; but we must hasten to explain that Victorians do not admit being third, or even second, to anyone on earth. To "do" Victoria on two sheets of foolscap on the lines of these articles means that injustice will be meted out to something or some one. We can't help that, two pages are the limit.

Any physical geography will show at once that Victoria is a land of forests. The range of mountains that has its beginnings in South Australia stops short for a space near the Victorian border, then the dividing range runs across the center of the state from west to east, thus furnishing watersheds for a lot of rivers that flow north into the Murray River and a lot more that flow south into the Southern Ocean. And the forests are everywhere, on both slopes of the mountains and even down onto the plains to the west. All kinds of botanic life may be found, and the state ought to be proud of the immense variety of eucalpyts found within its borders. It is a great honey-producing state, perhaps the greatest in the world, for the large majority of indigenous plants yield both honey and pollen. On the mountains are red box (**E. polyanthemos**), stringybarks (**E. eugenioides**) and other species, white gums (**E. paludosa**) and other species, spotted gums (**E. goniocalyx**), apple box (**E. Stuartiana**), messmate (**E. obliqua**), ironbark (**E. sideroxylon**), peppermint (**E. amygdalina**).

Along the rivers are red gum (**E.**

**rostrata** and **E. terreticonis)**, swamp gums **(E. Gummii)**, manna gums **(E. viminalis)** and on higher land yellow box **(E. melliodora)**, and since this is to be a general survey, we must firmly decline to enumerate any more eucalypts. Suffice it to say that to look over the illimitable range with its winding blue gullies clothed with the velvety greenness of dense forest growth is to realize that there is room for millions of apiarists. Every day our view extends over hundreds of miles of densely covered country and not a beekeeper to gather even a fraction of the vast crops of honey secreted year by year. The forest may be secured on lease, 2,000 acres for, say $25 per year.

To the west, the wheat country, there are belts of rich honey plants. Along the banks of the Murray River are the irrigation settlements that extend quite a distance from the river .Fruit blossoms and lucerne in abundance, for instance 600 acres of citrus fruits in one garden. Have you anything as big as that in America?

Down south, and especially the southeast, Gippsland in particular is the dairying land, rich dark soil, some fine alluvial that grows almost any crops, where the introduced blackberry has run wild and ruined the farmers that neglected to stem its insistent advance. Fourteen feet maize, and clover, white Dutch, strawberry, alsike, crimson, red and some others. Big trees—you take our word for it, they are big. Eighteen hundred fence rails 9 feet long by 10x3 inches out of one "stick"; where the axe men go up ten and fourteen feet on spring-boards to escape the enormous buttresses at the base of the giant, before attempting to fell the tree.

Of course, in a country such as we have attempted to describe there must be plenty of apiarists. Well, not as many as you might imagine. There are very few, if any box-hive men, for the laws of the state preclude the keeping of bees in other than "properly constructed frame hives"; such is the wording of the act.

There is a beekeepers' association, but it is very small and not at all representative of the many progressive apiarists in the state. The writer of these articles favors a federal body. The state association is not blessed with longevity; its income is very small, but the aggregate of all states placed at the disposal of one Federal body might do some good.

Regarding the instruction of novices and others who desire information, little or nothing is being done. The writer would like to see a Federal body of apiarists charged with the dissemination of apicultural knowledge, and to possess the power of granting certificates of competency to candidates who pass the prescribed examinations. In addition, such a body could more efficiently handle the export problem, and, under Government aegis, investigate the why and the wherefor of diseased bees—and undesirable beekeepers. (This is an afterthought).

Now, here is a secret or two about the returns per hive. We can show a record of 10 60-pound tins per hive, equal to 600 pounds, and, on the contrary, some years the return was not one ounce per hive. We are going to leave your readers to fill any figures they wish that will enable them to determine what is a fair average return. It ought to be easy; look at the range we have indicated, 600 pounds down to zero. So you see the apicultural industry in Australia is very like the same industry in America. Don't you think so?

### New South Wales

It was in the "Ma State," otherwise New South Wales, about 1882, that Captain Wallace, of the ship Isabella, landed the first colonies of honeybees in Australia. They were black bees, and so favorable for insect life are the conditions existing in the indigenous forests that the insects spread over the entire continent in countless numbers. The honeybee thus introduced is now known as the "bush" bee.

Like the rabbits, sparrows and foxes, the bee was obtained from Europe, but unlike all the former, the bee proved a blessing. The native bee, about the size of the common house fly, belongs to the genus **Trigona**, and while they make honeycomb with hexagonal cells about the diameter of a pin's head, the whole colony is rarely larger than a man's two hands placed palm to palm. They do not always build in rocks or holes in timber, but often just hang under a projecting branch. Bumblebees, Carpenter bees and some others are to be found. Strange to say, Mr. Gerald F. Hill F. E. S., one time Government Entomologist for the territory, informs me that he never encountered wax moths in the nests of the Trigona. (We had to insert this here because we forgot it when dealing with northern Australia, and, "better late than never.")

To get back to the "Ma State," it is so named because its people like to affect a motherly tone when dealing with the rest of Australia. Mind, we wouldn't like to say this in an "Aussie" journal. However New South Wales is a fine place and we are not surprised at Captain Cook landing there. Right now we should like to recall the fact that the same Cook acted as one of the scout-leaders that piloted Admiral Saunders' fleet at the landing of the British forces, under Wolfe, when Quebec was captured from the French.

To get back to the "Ma State" for the second time—if the Editor's patience will permit—It's "some" bee country. Near the coast the mountainous range that divides "Vic." runs northerly and almost parallel with the sea shore. It's a great forest, carrying a dense growth of eucalypts. The climate ranges all over the thermometer, both "F." and "C." It's way down cold in the southeast, about Monan, where the apiarists swear by the tremendous flows of honey from the snap or silver-gum **(E. vitrea)**. Along the rivers the beekeepers praise the red-gum **(E. rostrata)**. On the plains, the westerly portion of the state, the rich melliferous scent of the yellow-box pervades everything and makes fortunes for all the bee masters—that is, when the speculating profiteer permits. Up on the high land there is bloodwood **(E. corymbosa)**, cabbage-gum **(E. coriacea)**, ironbarks **(E. sideroxylon)**, and other species, mahogany **(E. resinifera)**, fuzzy-box **(E. Baueriana)**, white box **(E. hemiphloia)**, muzzlewood **(E. stellulata)**, tallow wood **(E. microcorys)**, and hundreds of wattles; but we're full up of enumerating any more, Mr. Editor; but should you care to insert others, look up our book from page 240, then clip ad infinitum.

Your readers must remember that we must keep one eye, that is figuratively speaking, on Editor Pender, of the "Australasian Beekeeper," for New South Wales is his state. However, about his district, it is mostly lucerne, and there are other areas in the state where lucerne is the mainstay. The "Ma State" has a live beekeepers' association with some district branches, with some jolly good apiarists, too. They have an apiarists' "Act" somewhat on the lines of that in Victoria, but space is too valuable to raise any controversy over the similarity of mere acts of Parliament, but that august body lays behind "Vic," for it yet permits selfish and unscrupulous settlers to ringbark and otherwise destroy valuable timber without much supervision. The "Act" says, "must leave 8 trees to the acre." Nuff said. "Vic" leases the tree tops to bee farmers at so much per annum, but "Viv" is miserably weak in dealing with the fire lighters who every year cause the conflagration of huge honey-yielding forests. So it's a "toss-up" between the two states, after all.

Some very large crops of honey have been recorded from New South Wales, but we don't wonder at that, as the New South Wales bees work all the hours God gives them. Yes, we mean it literally. Editor Pender, of West Maitland, once wrote that his bees worked in the moonlight and if any of your readers feel contentious over the matter we refer them to him. We feel sure he'll give it to them first hand, right and left.

By this time your readers will see that while there are many other honey plants, the main crops of the Australian mainland are produced from the "Glorious Gum-trees," as one of your leading architects described them when just viewing them growing in their native surroundings.

### Queensland

When one of our cornstalks was enjoying leave from his regiment of Light Horse, he wandered over to London, the city of his forbears. His tall form and sun-tanned hide, along with his apparent simplicity of nature soon earned this bush child many invitations to staid English homes. He "swanked."

"Yes," said he, "my father owns the largest prickly pear estate in Queensland." The silence of awe was his reward. But to Australasians the joke is the fact that the Queensland Government will give away first-class land to any person who is willing to clear it of "pear."

But the story contains a libel on the great northern state. It is a magnificent land with a semi-tropical climate and heaps of bananas and pineapples, sugar cane and cattle—and honey—and no foulbrood or much bee disease of any kind. Of course, there is prickly pear on the land, and the water-hyacinth on some of the streams, but these are mere trifles compared with the wonders of the forest. Yes, some honey is gathered from prickly pear, but the melliferous wealth of the indigenous trees is beyond belief.

Some of your readers will remember (American Bee Journal, September, 1915, page 313) one of our illustrated articles depicting a spine-bill honey-eater rifling the curiously-shaped flowers of the silky oak **(Grevillea robusta).** The writer has shaken branches of these trees and received a heavy shower of nectar. In the "bush" there are all sorts of climbing plants like the clematis **(Assitata)** and other species. This plant secretes a nice honey of a slightly greenish hue, but Queensland is typical in that the main crop of honey is derived from the indigenous gum-tree.

As a matter of truth, while a few eucalypts may be common to two or more states, the yellow box **(E. melliodora)**, for example, each state has species peculiar to it, and each species has its distinct period of florescence, so that not a month passes but some portion of Australia is harvesting a heavy crop. So, to make the fact of local application, each district has its own particular favorite. One district claims red-gum as its "banner" tree — that's America — Another puts its money on yellow box—that's a sporting term. Yet another will say, "My oath, that snap gum is a bonzer"—that's pure Australian. By the way, don't think that the preceding paragraph is applicable to Queensland only; it applies to the whole of the great commonwealth.

Along with the usual list of wattles or Acacias, the state owns a large number of gums; there is the grey-leaver and the broad-leaved ironbarks**(E. melanophloia)** and **(E. siderophloia)**, the coolibah **(E. microtheca)**, narrow-leaved ironbark **(E. crebra)**, blackbutt **E. uiluralis)**, white gum **(E. haemastoma)**, white stringybark **(E. acmenioides)**, spotted gum **(E. maculata))**. But we cannot do justice to half the honey plants of Queensland. The "Apicultural Journal," the official organ of the beekeepers' association, is published at Brisbane under the editorship of E. L. Jones, with E. M. Tarte as secretary of the publishing company. The writer of these articles is the illustrator. It is nicely "bot up" and the printing generally is good. They are all practical men who control the subject matter. Queensland is blessed with many progressive apiarists and the State Association is a live one. At present there are three bee journals published in "Aussie," but the "Australasian Beekeeper," Editor W. S. Pender, is the oldest and enjoys the largest circulation. The Queenslander is very enterprising and spends a fair amount on illustrative reproduction. The Victorian Journal is the newest, but more stodgy in its make-up. We like a good cover design, and the Victorian Journal is lamentably deficient in that respect. (By the way, speaking from the artistic aspect, it is time the "Western Honey Bee" selected a new dress. Considering the goods inside, it requires a better showcase.)

Queensland apiarists have an enameled medallion for their members and generally they are well up to date.

### Tasmania

The "Apple Garden,' 'or "Tassie," has a more southerly latitude than any other state, and while it grows very huge trees, they are better suited for the saw-milling industry. They throw up giant clean boles for hundreds of feet and, as mill logs, are unsurpassed. The small feathery tufts of foliage that crown these trunks do not carry much bloom. It is generally true that the stunted trees with large spreading tops are the greatest yielders of nectar. The true blue gum **(E. globulus)**, so well known to Californians, is limited to Tasmania and Victoria. Tasmania grows plenty of clover and harvests honey from that source and, of course, there are the apple trees; but you should see its sheep and the wool therefrom. In conclusion, Mr. Editor, we would like to make one request of your readers: "Please do not write for seeds." We are interested in the drawing of the plants and also the honey from gum-trees, but not in the sale of seeds or plants.

Field meet of Scott County, Missouri, beekeepers near Benton

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## Selling Honey

By A. Gordon Dye

Your interesting article on the honey selling campaign of the New York Globe leads me to add a word. The people of our cities like honey and will buy readily in 5 and 10 pound pails if it is brought to their attention and steps taken to keep them regularly supplied. But to do this work, cultivate a demand for honey, a study must be made of city people's habits of buying. You must win their confidence as to the purity, quality and reliability of your goods.

Honey flavors vary, and people's tastes vary, so honeys should be graded and labeled so that customers may buy the flavors they prefer, and be sure of getting them. City people are accustomed to having their needs supplied at regular intervals and only a small proportion will take the trouble to order by mail or telephone, and for the present they have not formed the habit of buying honey in large containers from the stores. This means that orders must be solicited if we are going to reach a large proportion of the consuming public, and the same territory must be covered regularly. This will require a large supply of honey which you can back as to quality and flavor. Agents and delivery service must be maintained for twelve months of the year. It is evident that individual beekeepers cannot do this work alone advantageously for several reasons: First, most beekeepers are of necessity too far from the large cities to conduct what must be a city business. Second, few beekeepers would have a sufficient supply to maintain such a business with one or more agents and delivery service. Third, few producers are qualified for or have the time to manage both the production end and the sales end of the business. And it is demoralizing to good business to have a number of beekeepers spasmodically putting a limited amount of honey on the market, of indefinite quality, in varied containers and at widely divergent prices.

Agents and delivery service started with sufficient honey back of an enterprise of this kind, with the right kind of a man to manage the business, beekeepers could be assured of a good market for their honey and the consumer could have the best honey on his table at a cost of from 10 to 15 cents a pound above wholesale prices, while in the bottled form, through the ordinary trade channels, the price must be from 30 to 40 or more cents a pound above wholesale prices.

I know these to be facts, as I have this winter marketed my own crop and what I could buy, totaling about 17,000 pounds in this manner, and have reached but a few of the possible honey consumers, and at irregular intervals.

Here is the field for co-operative effort.

New York.

## Turnbull's Method of Shook Swarming

By F. Dundas Todd

After the first of May most colonies in British Columbia are occupying two stories, mainly in 10-frame bodies. The year 1919, from the beginning of May to the end of August, was very dry, and in most regions was rather hard on the bees, but in Mr. Turnbull's locality there was a steady building-up flow all season, which may have much to do with the success of his experiment.

Discovering queen-cells one day, he decided to make a shook swarm, but having lots of spare combs, he wondered if it was possible to get a young queen mated from the lower half of a hive while the old queen occupied the upper half. He had previously tried the opposite, that is, mating the young queen from the upper story, with rather poor success.

His first step was to take three frames of brood from the hive and make a nucleus alongside, a queen-cell being left on one of the frames. This was intended for reserve if the young queen on the old stand failed to mate and start laying. Then on the old stand in the lower story he put all the remaining frames of brood excepting one, filling up the space with empty combs when necessary. A queen-cell was also left on one of the combs. Above this story he placed an excluder, then a second brood-chamber in which was the last frame of brood with the old queen, the seven combs or so left over, and empty combs or frames of foundation to fill.

Each hive was left in this condition until the start of the honey flow in the beginning of July. The young queens all mated and started egg-laying. When the flow started such old queens as he wished to save he carried to a new stand with two frames of brood and had them in good shape for wintering by the end of the honey flow, which in 1919 was, with him, unusually long. Where he did not wish to save the old queen he killed her and placed the excluder above the second story instead of the first.

One colony handled in this fashion gave a crop of 500 pounds, another almost as much, while the average from eight colonies in his home yard was 300 pounds.

At the Seattle meeting of the Washington Beekeepers' Association Mr. Turnbull told of his experience, to the intense interest of one of the big honey producers who had experimented along the same lines, but with complete failure as the result. On comparing notes the one point of divergence seemed to be the condition of the hive when the experiment was begun. Mr. Turnbull's colonies invariably had developed the swarming fever, the others had not, so never started queen-cells in the lower story, or destroyed them when given.

Mr. Turnbull's great wealth of combs was the consequence of a fierce siege of European foulbrood he had undergone the previous year, which had reduced his apiary by 75 per cent. In the lower Fraser country European foulbrood is no respecter of colonies, and attacks the strong and the weak with equal impartiality. Today one may have colonies covering twenty combs with from ten to fourteen frames of brood. A month later the brood will be rotten all through the hives. There are other experiences equally as peculiar. A good, careful beekeeper, with six colonies, found them all affected, so he dequeened at once and ordered queens from a queen breeder to arrive in three weeks. Two queens were sent at once and he introduced them, that being the tenth day after dequeening. All disease was apparently cleaned up, as it did not reappear. The rest of the queens arrived sixty days after dequeening, were introduced, but three of the colonies developed the disease. This experience seems to me to emphasize the value of resistant stock.

British Columbia.

(This is just the reverse of the plan described by Frank C. Pellett in the October, 1917, A. B. J. His plan was to mate the young queens in the upper story. While some correspondents have reported good success by that plan, others have reported failure. We will be glad to have further reports on the plan of mating the young queen in the lower hive-body as practiced by Mr. Turnbull, who reported success in every trial.

The difference should be noted between the two methods. Turnbull did not make the trial until the bees had built queen-cells, while Pellett succeeded with colonies in normal condition and where no evidence of the swarming fever had appeared.—Editor).

## The Honey Producer's Best Friend

By Clifford F. Muth

After reading Fred Huchting's article on "The (poor) Middleman," in the April issue of the American Bee Journal, I feel like Mr. Hawkins at the Buffalo convention—"Mad All Over."

Mr. Huchting refers to the prices of pork before and after the packers took hold of it. Let us suppose that all the pork packers went out of business and the farmer had to rely upon killing and selling his hogs to the consumer, a pound or two at a time. To say the very least, the farmer would get lots of experience and overhead expense to boot.

It is true that he may receive a few cents per pound more by doing all the work himself, but when all the farmers sold the same way, there would be a lot of throat cutting, besides the hogs.

The principle is the same with the beekeepers and the honey packers. One works for production and the other for consumption. Either one could do both to a certain extent, and after that he would neglect one or the other.

You, Mr. Huchting, are very, very much mistaken about the honey packers. They are the ones who advertise and create the demand for honey and hold up the price by outbidding each other.

The next time you meet a honey packer, shake his hand, for he is your friend in need, and a friend indeed.

Ohio.

## Imperfect Mating

The article in the April Journal by Prof. John Anderson on "Imperfect Mating of Queens" seems to explain an unusual experience occurring at my home yard this spring.

In March, 1919, I removed all my bees from the home yard to a gum swamp one mile away, excepting a good colony with breeding queen. My idea was to have the queens purely mated. In June this colony prepared to swarm, so they were swarmed artificially, leaving the old queen, now 3 years old, at the original stand. The swarm or colony No. 2 quickly built up with a young queen and made two supers of honey. Colony No. 1 made only one super of honey, in September.

An examination on March 3, 1920, showed than colony No. 1 had no brood, while No. 2 had eggs scattered over several frames, and drone larvæ in worker cells. Thinking both colonies to be queenless, they were given frames of brood, but neither began cells. An attempt was made to introduce a queen into colony No. 1, with failure.

After a close examination on March 12 a young queen just beginning to lay, was found in No. 1. An old queen was found in No. 2.

The eggs in colony No. 2 hatched into drones only. The eggs laid by the queen in colony No. 1 hatched into drones and workers, but both of meagre quantity for the time of the year. These queens were promptly removed, and both colonies began queen cells.

It sems that the queen in colony No. 1 superseded the old queen late in the fall of 1919, but began laying late in the spring. No drones were flying when she began to lay, March 12.

My home yard is in a drained swamp area with all the surrounding forest removed, making the conditions similar to those on an island.

My bees wintered nicely with no loss. They are mostly building up strong, and in two stories. A few colonies have a disease unknown to me. The yellow jassamine is in full bloom, causing many young Italians to die. I find some of the darker colored colonies seem to be immune to this poisonous honey.

Am working for a flow from gum and gallberry this spring. They failed last year. B. ANDERSON.

North Carolina.

## Death of L. C. Woodman

The death of Lewis Cass Woodman, aged 72, occurred on May 3. He was the father of A. G. Woodman and had been engaged in beekeeping for over 45 years, keeping as high as 400 colonies of bees in connection with fruit farming on an extensive scale. His first experience in bees was a purchase of 10 colonies for $150, in the fall of the year, and the next spring they were all dead. He immediately purchased more bees, and has been in the business continuously since that time. At different times he has shipped carloads of bees to different parts of Upper Michigan and his last venture of this kind was only 2 years ago in the shipping of 200 colonies to the Upper Peninsula, into the famous clover land districts, which also abound in wild red raspberry, epilobium or fireweed and other honey-producing plants.

## Swarms on Foundation

Some time ago I saw stated in the American Bee Journal that full sheets of foundation should never be given to a swarm, and in the May number, page 170, column 3, you say: "It will not do in hot weather to give all foundation to a swarm." Well, I have hundreds of combs drawn out under this very condition. It is true if a swarm is forced to cluster on the foundation the latter will generally break down, but if an empty hive-body is placed first on the bottom-board and the body containing the frames with foundation over this, the swarm will cluster in the lower empty story; the foundation will be drawn out in a very short time, and the resulting combs will be as perfect as one could wish.

Two days after hiving the swarm I remove the lower empty story, and if some of the outside combs are not all drawn out I put them in the center. A super should also be given then and if it contains drawn extracting combs a queen excluder should be used.

The use of an empty story will also help prevent the absconding of swarms.

Indiana.

## Artificial Increase in Colonies of Bees With Prospects for a Honey Crop

By Brother Alphonse Veith, O. S. B.

Increase in the number of colonies, either by dividing or natural swarming, will generally result in a shorter honey crop. It can, however, be done with less interference in the production of honey if handled in the proper way. First, colonies must be quite strong, covering about 16 Langstroth frames, with 6 or 8 combs mostly filled with brood. Next is a good honey flow. If a number of colonies are to be divided and the apiarist intends to let his own bees rear the queens, then the best and most prolific colony should be divided about 10 days previous to the others, and the sealed queen cells are used with a cell protector to start new colonies.

To obtain the best results, choose the time of the day when bees are most busy in gathering honey. Place your empty hive right near to the colony to be treated; take half of the combs with brood and bees and place them in the new hive. If drawn-out combs are not at hand, use full sheets of foundation. Intermingle them as much as possible with the combs already occupied by the bees, and the foundation will be drawn out quicker and straighter than would be the case if placed side by side. Leave both colonies on the same stand as near together as possible; let each occupy half the space which the colony occupied before dividing. This is very important, because the returning field bees, not knowing which is which, will enter into both, and so the working force will be divided more equally than would be the case if **one** is moved to a new stand. In case they are moved to a new stand, a great number of bees will return to the old stand, leaving the new colony weak and almost inactive for many days. However, if left on the stand, as described, they will work more busily than they would if left single. If drawn-out combs can be given instead of foundation, the bees treated thus will store per colony, spring count, nearly as much surplus honey as they would have stored if no increase had been made. This is especially the case when there is a late honey flow.

With drawn-out combs, bees treated thus averaged 65 pounds of extracted honey per colony, spring count, in a locality less favorable for a great honey harvest, and each colony was well supplied with winter stores after the last honey flow, in October.

(We would recommend that the colony which is to rear the queen-cells be left undivided on the old stand, so that it may not be weakened, as it is very important that the queen-cells be produced in a very strong colony. Its queen may be removed and used for another purpose, or she may be placed in a new hive with brood from another colony and also given young bees from some other colony. The rearing of good queen-cells is of the utmost importance.—Editor.)

Mary had a swarm of bees,
Who, just to save their lives,
Went everywhere that Mary went,
Because she had the hives.
Now Mary had a nice bee dress,
Which made the men all wonder.
But everywhere that Mary went
The bees would get in under.
—Anonymous.

# BEEKEEPERS BY THE WAY

### An Old-Timer

J. E. Pleasants, of Orange, Calif., is one of the few men still living who went to California during the first gold excitement in 1849. As a small boy he crossed the plains with his father at that time and has lived to see California change from a howling wilderness to a veritable garden spot. In 1873 he began beekeeping, and has continued as a honey producer since that time.

Mr. Pleasants has long been prominent among California beemen and had charge of the exhibit of the California Association at the New Orleans exposition. For the past 18 years he has been in charge of bee inspection for Orange County.

When he began beekeeping nearly all the honey came from sages and other native vegetation. As the country developed, the flora gradually changed until the principal sources came to be such cultivated crops as oranges and alfalfa, although much honey is still secured from wild plants on the mountain sides. He has produced as high as thirty tons of extracted honey in a season in his apiaries.

Although regarded as an old-timer, he is by no means a back number, for California beekeepers still regard Pleasants as a leader, and have elected him President of the State Beekeepers' Association.

One of California's original old-timers

## A New Bulletin for Beginners

A very good bulletin, entitled "Beekeeping for Beginners," by H. B. Parks, has recently been issued by the Experiment Station of Texas at College Station. The bulletin is quite complete, with 25 pages of matter of timely interest to the novice. It is well illustrated and should be easily understood. Beekeepers interested can probably secure copies by addressing the Director of the Experiment Station at College Station, Tex.

## Mould and Bees

By S. H. Sabine

In connection with the discussion now going on in the bee magazines on the subject of "mould" and the "disappearing disease," I had an experience which may be of interest. I was at that time located in Buffalo, N. Y., and purchased the colony from a farmer who had had the hive covered with hay during the winter. When I moved the bees home, April 15, the colony was not strong and the bottom board was covered with dead bees.

About a week later I transferred the nine frames which the hive contained to a new hive and discovered that the three outside frames on each side had some mould on them and all the dead bees on the bottom board were covered with mould. The remaining three frames contained some brood and eggs. Then followed two weeks or more of rainy weather, during which time the bees could not do much in the way of pollen gathering. Then came a few bright, warm days when they worked hard.

After the bees started working I noticed considerable fighting at the entrance. They would tumble and roll around, holding on and biting each other, and would finally roll down the alighting board locked together. Then one of them would fly away and the other of the pair would crawl around in the grass. This continued for several days, with several hundred bees crawling in the grass daily.

One day I opened the hive again to see if I could determine the cause and found nearly as many dead and mouldy bees on the bottom board as there had been when I transferred them to the new hive, but they were nearly all under the outside frames, which I had previously noted contained mould. I cleaned out the hive, removed four frames which contained the most mould, and replaced with frames of foundation, raised the back of the cover about an inch for ventilation for the rest of the day and closed it before night and had no more trouble with the fighting, or, as I at first thought, robbing bees.

This colony afterward built up strong and stored about 25 pounds of fall surplus. The queen was less than two years old.

Texas.

## Do Queens Lay in Queen Cells?

Does the queen ever lay an egg in the queen cell? I have my doubts about it, for I don't see why she should want to raise a queen that would drive her from her home. I have seen a queen on the alighting board, when the swarm went out, turn and go back in the hive. The swarm had to return. Next day the bees got back of her and pushed her off and she went with them. Now, is it reasonable to think she laid that egg in the cell? We know that queens reason. When the honey flow is letting up she will quit laying so as to not have too many bees, as the old ones are not wearing out so fast. We know that the bees make the queen cell and guard it.

Do bees reason? I think they do. Proof of it: If we put in a hive a comb that is breaking loose from the top-bar, the first thing they do is to build braces across to the other combs to keep it from breaking down when filled. MICHIGAN.

(We were inclined to believe that queens never lay eggs in queen cells, until a number of people testified to seeing them do it. It is possible that they do this only when the cell is rudimentary, incomplete enough that it may not look to them as other than a short drone cell. We know that a queen eagerly destroys full-sized, inhabited queen cells, if the bees permit her to do so. Anyone who uses a single-comb observation hive has occasion to see this, if he introduces a queen cell to it while there is a laying queen there, or if he can induce the bees of it to rear queen cells preparatory to swarming and then change their mind.

Do bees reason? We believe they do. But others are entitled to whatever opinion they may entertain after hearing the pros and cons. What is convincing to one man is insufficient to another.

As to the queen's "letting up" of her laying at the end of the season, there are causes for it, other than her powers of reasoning. She lays more or less, according to the amount of food offered to her by the bees, as they meet her, in the hive. We are told that they feed her on the same "royal jelly" as is fed to young larvæ. But they certainly offer her honey, also. Moreover, there must be a season of greater laying for queens, as for hens. If there is an intentional reduction in her laying at the end of the season, it is due more to the bees than to her own volition.—C. P. D.)

Henry Ehlers, of Anamosa, Iowa, has kept bees 45 years

## Angry Bees

I have kept bees for about 18 years, have been a voracious reader of bee lore, have had as many as 90 colonies and have always tried to keep abreast of the times in the management of my apiaries. I have, for a number of years, bought queens from breeders who have boasted of gentle strains, not that I minded stings, but for the comfort of my family and friends, though I cannot say that I ever requeened a colony for the sole reason that they were cross. I could forgive a few stings if they delivered the goods. My trouble began last summer, when I clipped the queens during fruit bloom and dandelion. Only 2 or 3 colonies were marked as cross, and the remarkable thing about the incident was that it occurred nearly simultaneously in apiaries fifteen miles apart, the outapiary being by far the worst. These bees were in a pasture and situated about 30 feet from a poplar bluff. A few cattle and horses were at all times in the pasture, but gave the bees a wide berth in the daytime, at least, and the length of the grass showed that little grazing was done in the immediate vicinity of the hives. About the first of July these bees were decidedly unpleasant to handle, but as I had often remarked that our little friends were always more peppery when they were working on mustard, and as there was lots of that about, and clover apparently yielding nothing, I hoped they would soon recover their temper. But each visit found them worse than the last. They appeared to be on the lookout for me, and came to meet me, an attention I was not capable of appreciating. Smoke was of no use; it only seemed to increase their anger; and on one occasion, on opening the smoker to replenish, they piled into it to a depth of an inch or more, extinguishing the fire. Gloves gave but partial protection to the hands, and the smallest aperture in my clothing was investigated with a vigor and pertinacity worthy of a better cause, and with a success that caused me occasionally to make a spasmodic grab at my clothing and stroll delicately over to the friendly shelter of a barn, to remove the stings and vainly try to make myself invulnerable. It was not necessary to open a hive to investigate this demoniac frenzy. At the home yards this condition did not start quite so early nor did they get quite so bad, but considerably worse than anything I had experienced before.

Now for the possible cause. I have for seven years allowed a few sheep in the home apiary to keep down the grass. These, at first, were Suffolks, having smooth black faces, a ready mark for the bees. Last year I changed to Oxfords. These have very woolly faces, few vulnerable spots, and they are not nearly so much afraid of bees as the Suffolks. Having a few young rams, I shut them in the apiary, and my theory is that they disturbed the bees at nights. At the outapiary the cause was similar, though conditions differed. It was after the honey was off and work for the season was over that I discovered what seemed a plausible reason for the anger of the bees. The bluff, a few feet from the hives, had been, during the fly season, the stamping ground at night for a bunch of horses. The soil was a very heavy, rubber-like clay. I think they would feel the vibration, with the resultant irritability. Do you think this possible, or has anything similar ever been reported? CANADA.

(We believe your surmise is right. It takes very little to render some bees cross. When they once become cross, it seems to remain in the family. The only way we have ever found to change the disposition was to change the queen. But the initial cause of the ill-disposition must be also altered.—C. P. D.)

## Queen Bee Introduction by Means of All-Young Bees

By F. Greiner

Our friend, Jay Smith, tells in Gleaning of some humiliating facts as regards queen introduction. I have noticed we go along sometimes a term of years and have remarkable success in introducing, and all of a sudden, when we think we have the thing pat, we meet our Waterloo. To confine a new to-be-introduced queen under a push-into-the-comb cage is a very old one, and as good a one as I know of. Many years ago I received queens in the mails in such cages. They consisted of a shallow wooden frame, covered on one side with wire screen and closed up on the other side with a tin slide. Several prongs were fastened to the frame. They were to be pushed into the comb over some honey and hatching brood, if possible, and presto, the bees and queen were liberated on the comb. Our friend Smith's cage is better, in as much as prongs are all around the cage, thus preventing an untimely escape of the bees within the cage. I think here was the weak point of the old style cage. The principle of the cage is that the strange bees come in direct touch with the comb structure and a portion of the young bees, which hatch under the cage. With just emerging bees one may do almost anything; they mingle peacefully with any other bees, accept any kind of a queen, stay anywhere, etc., and the past season it occurred to me they might be made the reception committee to have strange bees introduced into their comunity and so I tried it in a few cases late in the season. It gave me excellent results and I write this in the hope to induce other beekeepers to try this method this summer. It is not necessary that we see the young bees emerge; there are usually plenty of young fuzzy bees on any brood comb which an experienced beekeeper may select from among the other inmates, pick them up by the wings and tuck them into the cage where the strange queen is. The more of these young bees we can stuff into the cage without overcrowding the better. The next day an opening may be made, or the tin slide over the candy hole may be removed and the uniting of the folk within with those without will proceed harmoniously. We can well afford to take more time to make sure of introducing a queen bee; it is not simply the loss of a qreen which is at stake, but also the greater usefulness of a colony of bees, which may mean more than the mere value of a queen.

New York.

## A Good Location

Bees here have generally wintered very poorly, many small beekeepers losing all their bees, and many ordinarily quite successful beekeepers losing 10 to 20 per cent of their colonies; many weak colonies, long, cold winter and late, backward spring. Last year bees did fairly well. European foulbrood has had its effect on bees not well cared for, many farmer beekeepers losing all they had from foulbrood and neglect. We have very good location, generally, for beekeeping here in Warren County, Pennsylvania. Principal sources of honey are hard and soft maples, dandelion, fruit bloom, red raspberry, white-wood, white and alsike clover, basswood, sumac, buckwheat, fall asters and goldenrod, making quite a good list of honey-yielding plants and trees. Our seasons are short and cool, too much so for comb-honey production, but extracted ordinarily does quite well.

Our winters are long and cold, with deep snows, and many years so steady cold that bees do not get a flight for fully four months.

We have a nice home demand at retail for all the honey produced, at good prices. Farmers generally are inclined to increase the acreage of alsike clover and buckwheat, which adds quite materially to the honey crops, and the late buckwheat crop stimulates brood rearing late and fills the hives nicely with both brood and honey, which puts the bees in fine condition, usually, for the long, cold winters.

While we do not get the large honey crops obtained in many parts of the country, yet we are reasonably certain of a surplus every year when bees are properly cared for.

Pennsylvania.

## A Short Story

"I see, in the British Bee Journal for March 25, a quotation from 'The Shooting Times" which asserts that bees use their sting as a trowel to finish the honey cell and drop a little bit of the poison into the honey before sealing up the cell, saying that 'without it the honey would spoil.' Is there any truth in that statement?"—Ontario.

Answer—The party who wrote that is not the only man to hold that bees put a drop of poison in each cell of honey before sealing it. Even as respectable an authority as Gaston Bonnier, author of "Les Nectaires," and of

Quiet Italians on the comb

some excellent works on botany, asserts, in L'Apiculteur of February, page 50, that before sealing the cell, the bees "put into it with their sting a drop of venom; for this liquid, coming from their poison bag, has for its principal purpose the preservation of the honey." Years ago, the Rev, W. F. Clarke, for a short time editor of the American Bee Journal, held the same view.

As to the truth in these statements, we can only give an opinion, which is decidedly negative of these beliefs. It is quite probable that those statements are based upon the fact that nectar undergoes a change in the stomach of the bee; a certain amount of an acid, probably produced by the saliva of the bee, being found in the honey, while it does not exist in the nectar of flowers. Every now and then, some new-fangled theory, more or less absurd, springs up. Very few of these theories stand the light of discussion and experience.—C. P. D.

## How Much a Colony of Bees Consumes in a Year

From L'Apicoltore of March, 1920

The causes of consumption by a swarm are the following: First, keeping up the life and activity of the bees, in the hive and out of it. Second, feeding of the brood. Third, secretion of beeswax. Fourth, feeding the drones. The daily consumption of a bee varies between gram. 0.003 and gram. 0.12, with an average of gram. 0.03, according to the circumstances in which it finds itself.

The entire amount of food consumed by a larva of worker during the entire period of its development is around gram. 0.40; the daily consumption of a drone varies between gram. 0.04 and 0.05. Thus we may be able to determine the total consumption of a swarm of bees, for its ordinary needs, during the course of, a year taking as a basis a strong colony in a large frame hive, in a country where plants offer a great, single flowering, for a month, and we will summarize as follows the diverse phases of their activity and consumption.

To figure up the consumption of the drones, we will admit that in a good swarm there are about 1,500 of them, the length of their life being, on the average of about two months, divided into two or more periods, separated by intervals during which there are no drones. Accepting the consumption figure of 30 grams per 1,000 drones, we find that the 1,500 consume, in the two months, kilos 2.7. In thus figuring, we reach, in round figures, 560 kilos, for the maintaining of the swarm in the different phases of its activity. This quantity does not represent ripe honey, such as we harvest from the hives, but nectar, containing between 75 and 80 per cent of water, or representing about 182 kilos of honey.

To this food, necessary to the sustenance of the swarm, we must add what is needed for the brood. A larva needs for its growth and transformations, a minimum of gram. 0.40 of food, and a colony renews its population at least four times during the year. This renewal does not, probably, reach a maximum of 80,000. Let us admit that it is on an average of 60,000. This represents 240,000 larvæ reared at a cost of kilos. 96, of a food composed, for a third each, of water, pollen and honey, or 32 kilos. of honey.

There remains yet to be figured the secretion of beeswax. With the system of movable frames, we return to the bees their entire combs after having extracted the honey, or we may give the bees sheets of comb foundation; but according to De Layens, this is not the best system, and it is thought preferable to let the bees build about 5 combs of 12 square decimeters each, containing in all 660 grams. This wax is produced economically and the apiarist will not see it diminish his harvest; however, it requires a certain amount of food which we may figure at 4 kilos.

Adding the amounts, we find.

| | | |
|---|---|---|
| To sustain the bees | 182 kilos | 400 lbs. |
| To feed the brood | 32 kilos | 70 lbs. |
| To produce wax | 4 kilos | 9 lbs. |
| Total | 218 kilos | 479 lbs. |

Translated by C. P. Dadant.

(We had supposed that the bees require more honey to rear brood than to sustain the colony. It is a well-known fact that the bees will consume more stores in a few weeks of brood rearing in early spring than are used to carry the colony through the entire winter. Let some of our research men at the colleges look into this matter.—F. C. P.)

### Maine Beemen Meet

The beekeepers of Maine held their Convention at the college of Agriculture at Orono in connection with the general farmers' week, on March 24. H. W. Matthews, F. L. Mason and O. B. Griffith were the principal speakers.

### Binding the Journal

Mr. Herschell Felton, of Millersburg, Ill., suggests a way to bind the American Bee Journal together, which he finds in the "Pathfinder." We condense the more important part of it as follows:

Cut two strips of either tin or cardboard about a half inch wide and of the height of the Journal pages. Punch a hole at top and bottom in each of these, as well as in the edge of the Journal, a quarter inch or so from the back. The holes must be as nearly opposite as possible. Then pass a shoe string through these and tie it. A shoe string is best, as it is more easy to pass it through the holes. The Pathfinder method is a trifle more complicated, but this is sufficient.

### A Good Report

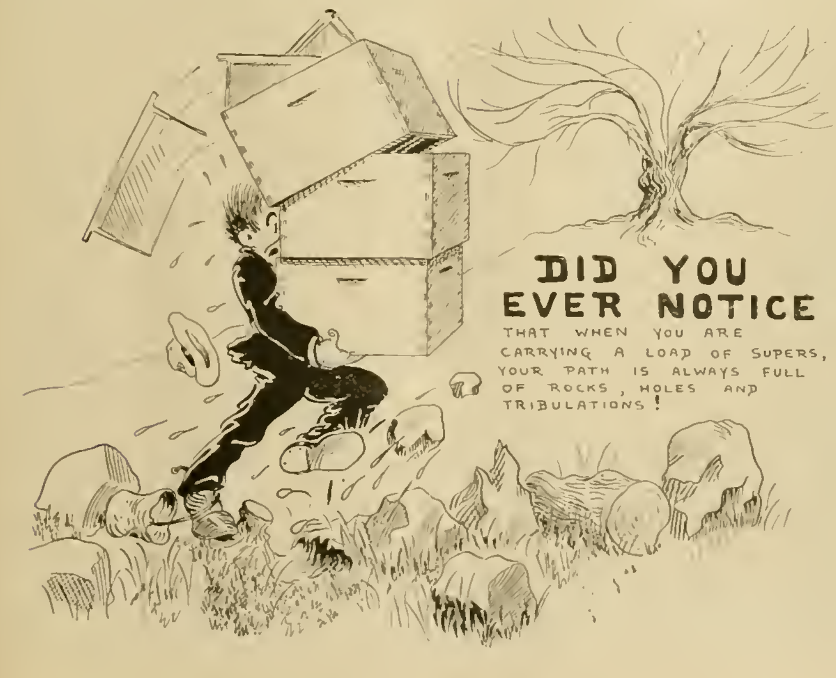
Edgar G. Brown, of Sergeant Bluff, Iowa, reports that from 856 colonies which went into winter quarters last fall in his six yards he took out a total of 847 colonies alive this spring. Several queens were failing, and he anticipated uniting a number of weak colonies. However, he estimated that after all necessary uniting was done he would still have more than 800 colonies ready for the harvest. This is a very good showing and argues well for cellar wintering in northern Iowa.

### Heavy Losses in the West

L. P. Peterson, of Vale, Ore., writes us that the winter loss in portions of western Idaho and eastern Oregon will amount to 30 to 40 per cent. He states that about 10 per cent of the bees died during winter, but that the cold and backward spring was fatal to the weak colonies to such an extent as to bring the losses to the higher figure. On April 22 the weather was still too cold for brood-rearing to progress favorably, and the outlook for the season he regarded as gloomy.

### Night Conventions

The series of night meetings of the Maryland State Beekeepers' Asso-


DID YOU EVER NOTICE
THAT WHEN YOU ARE CARRYING A LOAD OF SUPERS, YOUR PATH IS ALWAYS FULL OF ROCKS, HOLES AND TRIBULATIONS!

ciation came to a close with the final session in the Hotel Rennert on the night of April 29. This series of night meetings has been exceptionally well attended and proved to be of wonderful success. The crowning feature was the splendid address by Mr. G. S. Demuth, of the Bureau of Entomology, Office of Bee Investigations, on swarm control with its application to comb-honey production. His appearance on the program came as a result of a request for his services as a lecturer, and was more than anticipated by the Maryland beekeepers.

### Beekeepers Are Organizing

The bulletin for April from the office of the State Apiarist announces that there are now eighteen county associations of beekeepers in Iowa. These are working in affiliation with the State Beekeepers' Association, of which F. B. Paddock is secretary. Some States have even more county organizations than has Iowa. Much benefit is to be derived from this movement, and we hope that the benefits or organization can soon be extended to the beekeepers of every State where honey production is important.

## DR. MILLER'S ANSWERS

Answered by the Editor during the illness of Dr. Miller.

**If an addressed stamped envelope is enclosed with the questions asked, a copy of the reply to be published will be mailed to the enquirer. Some questions require too lengthy answers to be available in this department. In such case the enquirer will be referred to the proper authorities or treatises. In many cases if the enquirer will read the questions of the previous numbers he will find exactly what he seeks.**

### Sowing Buckwheat

I am writing you for some information in regard to sowing buckwheat.

1. How much seed is required to sow an acre?
2. What kind of land is best for its production, rich land, medium or poor? Is bottom land good for it?
3. Which month do you consider the best to sow seed?
4. Should it be sown broadcast, drilled or some other way?
5. After corn is plowed the last time, say the latter part of June, would it be all right to sow it among the corn broadcast, or drilled in between the rows?
6. I want to get a honey crop from the buckwheat blossoms, and also gather the grain; can this be done?
7. About how much buckwheat will an acre of ground produce?
8. Will stock thrive on the grain, and does it make good chicken feed, and does it have to be ground, or fed whole? ILLINOIS.

Answers.—1. From 2 pecks to a bushel and a quarter, according to the richness of the soil. In poor soil it takes more, as it does not branch out so luxuriantly. Sowing it in a cornfield probably two pecks would be enough.

2. Any soil will do. It is one of the main crops in the poor lands of Normandy and Brittany, in France. It is grown plentifully in the New York State hills, also in Michigan, Ontario, etc. It will surely thrive in "bottom land."

3. We would sow it about July 1. But it may be sown as late as August 1, though early frosts in September would kill it.

4. It may be drilled or sowed broadcast.

5. Either way is good. Do not sow it too early, as it might suffer from drought. It will not yield as much honey in a cornfield as separately, but will yield some.

6. Yes, but buckwheat is a very uncertain crop with us. "American Honey Plants" reports it as very successful in Ontario and in New York State. Our experience is that bees work on it only in the forenoon, rarely in the afternoon.

7. From nothing up to 40 bushels or more, according to circumstances.

8. It is good chicken feed, but is usually in good demand for buckwheat flour. The chickens eat it whole. We don't think it is fed to cattle.

We used to donate buckwheat to our neighbors for sowing it on their farms. As it blooms at the same time as the persicarias (heartsease, smartweed), we decided it did not pay, especially as buckwheat honey is of very poor quality, a fourth grade honey, and damages the quality of the other honey harvested at the same time.

### Bees Getting Household Poisons

Will you kindly advise me as to the possible danger from bees getting access to certain types of household poison now being commonly used throughout the country. I refer to poison the preparation of which includes honey and sugar, and which is placed about the homes to kill ants and other insects, and later is tossed out the windows where it can be found by the bees. Is there any danger to human life from the bees storing such poisonous sweets? GEORGIA.

Answer.—There would perhaps be some danger to human beings, if the poison you mention could be stored by bees in large quantity, and especially if this poison was slow in its action.

The arguments that militate against the possible injury to human beings, in the consumption by the bees of a small quantity of poisonous sweets, lie in the fact that bees will not take other sweets than honey in the blossom, unless there are none in the fields. In other words, when there is nectar in the flowers, the bees care but little for other sweets. When there is no nectar in the fields, a small quantity of poisonous sweet, gathered by them, would probably be stored in the cells of the brood chamber to be used in feeding the brood. So the poisons would damage the bees and their brood, when they might not endanger human beings who consumed the honey from that hive afterwards.

If the poisonous compounds were gathered in large quantity, this would be a very different question, as the storage of this harvest might be in the supers or surplus honey receptacles as well as in the brood combs.

We have heard of bees being poisoned by sweet spraying compounds, but never to a very great extent. We have never yet heard of human beings having been poisoned in this way.

### Shipping Bees

I have bought 20 colonies of bees and they are at "Haubstadt," Indiana. Now could I ship these hives by parcel post, providing the hives did not weigh over 70 pounds each, or would you think it would be cheaper to ship them by express to Chicago? What would they charge per 100 pounds for bees when the distance would be about 300 miles from Chicago, Ill? Would you screen them at the top? CHICAGO.

Answer.—It would be out of the question, we believe, to ship hives of bees by parcel post, even if the weight was not prohibitive. The time may come when this can be done.

The cost by express on a 300-mile run is about $2.25 per hundred weight. On a straight line to Chicago, like the C. & E. I., there ought to be little delay. If arrangements could be made to get them on a through freight, the bees might -- shipped in that way and not be more than two or three days on the way. You could find this out from the freight agent at Chicago, 112 West Adams St. But as the railroads charge very high freight rates on bees, it may be cheapest to send by express.

If the colonies are strong and you ship in warm weather, the bees should have a screen at least 4 inches wide across the top, and perhaps one of similar size across the bottom. The requirements depend upon the strength of the colonies. Very strong colonies, in hot weather, need a space of an inch or two above the frames in which to congregate and, in such cases, a whole screen on top is advisable. Do not ship colonies containing fresh honey, at any time.

### Honey From Diseased Colonies

Does honey that has been extracted from foulbrood colonies contain foulbrood germs or bacteria? CALIFORNIA.

Answer.—Yes, there is great danger that honey from foulbrood colonies may contain germs of the bacilli that cause foulbrood. According to Dr. White, the germ of Bacillus pluton, the cause of European foulbrood, is not likely to be carried in honey over winter, as it usually dies in honey, in from 3 to 7 months. But the Bacillus larvæ, the cause of American foulbrood, lives much longer. In practice, when a colony cures itself of European foulbrood through the removal and replacing of the queen, there appears to be little danger of its honey being contaminated, while in American foulbrood it seems as if the least amount of honey of a diseased colony transmits it. But in all these matters the proportion of disease in the hive has much influence upon the result. We would hesitate to give to a healthy colony any of the honey from a diseased colony.

### Location

I expect to be out of the army in a short time and I intend to make beekeeping (in which I have limited experience) my work. I intend to start with a few colonies and gradually expand until I have the largest number I find it practical to manage. The first problem is to determine where to locate.

Please inform me what sections of the country you consider beekeeping can be engaged in on a large scale to best advantage, and why. In particular, I should like your opinion on conditions in Washington, Oregon, California and Arizona. ILLINOIS.

Answer.—There are good spots and poor spots in almost every State. If I were traveling through the United States, and visited this particular spot, where I live at present, with its shortage of clover bloom in perspective, I would probably call it one of the most undesirable spots of all.

There are some very good spots for bees in central Utah, many in Idaho, some in Washington and Oregon; California has millions of acres good for bees. We might say the same of all our States. Perhaps the best, after California, are the Mountain States. Texas has some very productive regions. Michigan and Wisconsin have thousands of good spots.

My advice would be to select the State you prefer. Then visit around a little till you find a spot where beekeepers are successful. Pick out a location where you will not be in another man's way and go ahead. This may be too vague; but the precise directions would require special investigations.

### Separating a Double Hive

1. I intend to put a hive body with brood frames containing some honey under my strongest colonies in April, and about the 15th of May, when there is brood in both hive bodies can I separate each double hive by placing the queenless half on a new stand and introduce a laying queen to each and leave the old queens in their old locations? I have a 500-page bee-book which gives only two plans in this regard, and both being very complicated.

2. Would it be better to leave these colonies double until the main honey flow is over and then divide them as above? My idea is that when producing comb honey the latter would not work well unless the brood from the lower hive is exchanged with that of the upper as fast as it hatches in upper hive, to avoid the bees storing the surplus in the upper hive instead of the super.

MINNESOTA.

Answers.—1. Your plan will work if you don't put it into effect too early. The half which does not get the queen must get more young bees, to help it take care of the brood. I would shake a few of the young bees of the queenright half in front of that hive after moving it. Also make sure that they have young larvæ in case you do not give them a queen, or in case that queen is not accepted.

2. If you leave the two hive bodies until the main honey flow is over, you will be likely to find that they will crowd the honey in the combs that have no brood in them. In this way you will have a less amount of surplus honey. But if you want much increase, that honey may come into good use to help the needy colonies at the end of the crop. You might treat a part of the colonies early and the others late. In this way, if you watch them closely, you will be able to help the needy ones as often as they need help.

### Moldy Frames

I have at hand a good many moldy frames of honey. Can I give same to colonies without them having any bad effects? These frames of honey are but slightly moldy; here and there I find patches of mold on comb.

I also have a lot of empty combs which are affected with mold. Can I use these in the extracting supers, or broodnest?

NEW YORK.

Answer.—You can give those combs to the bees without fear of any bad effects. But I would recommend that you give them to strong colonies, one or two at a time. The bees will soon clean them. Weak colonies would have more trouble.

The combs for the extracting supers might be exposed to air for a few days, before using them.

### Hives With a Glass

I am a new beginner with bees and I want to get started with the best gums and fixtures. My father had gums with glass on the back side of gum and on the sides of supers, which I thought very convenient. Do you have that kind?

IOWA.

Answer.—The average beekeeper does not want glass in his hives, except in the one-frame hives, which he uses for observing. Glass along the outer combs cannot give one a definite knowledge of the inner conditions of the hive. Besides, in a year or two the bees will propolize the glass so that you cannot look through it. Better follow the modern way and inspect your hives by using a little smoke and making sure whether they have a queen and sufficient stores. Also make sure that they have no disease of the brood, which you could not ascertain with a glass on the side.

### Miscellaneous

1. How early should hives be inspected?

2. If comb is ill-shaped, how remedied?

3. If bees are dead and comb part full of honey, smeared dark or yellow, what to do with it?

4. Will scorched honey kill bees?

5. If any disease, would boiling it make it safe to feed the bees?

6. If comb is partly candied in hive, can bees take care of same?

7. How often through the season should hive be inspected?

8. Last season my first swarms came off June 1; must have been several swarms together; looked like a big calf up in the apple tree. I had a large dish pan and put burlap on, leaving one end to cover over bees. As I could get only about one-fourth of them at a time, they would fly back faster than I could get them down to the hive. I got two hives then 3; got some to going in; then saw another bunch in small pear tree, and I did my best for about 3 or 4 hours to hive them, and managed to save one small swarm out of the whole lot. What might have been the trouble? I had 2 swarms leave after giving them a frame of brood. I used full sheets of foundation.

PENNSYLVANIA.

Answers.—1. Inspect them as soon as warm days come. Clean and close down the dead colonies. Feed those that are short.

2. Ill-shaped combs should be taken out and straightened, fastening them in proper position with braces of wire, wood or even strong twine.

3. See first reply. Use the honey of dead colonies for those that may be short.

4. Scorched honey is never very good, but it is not dangerous to feed bees when they can fly every day. For winter use, it is deadly. There is no need of scorching honey if you heat it (au bain-marie) over water. Ask your cook how that is done.

5. Yes, boiling the honey or raising it to boiling point of water will kill germs of disease in about 30 minutes.

6. Bees use granulated or candied honey readily.

7. Inspect them as often as you think they need something. Four inspections a year would be rather too scanty. Twenty would probably be more than needed.

8. The best way to gather a swarm, where you cannot cut the limb on which they cluster, is to present them a comb, dry or full of brood. They will quickly crawl upon it, and you can then put them wherever you want. Your runaway swarms were probably secondary swarms with virgin queens. A new swarm with good queen rarely leaves the hive in which it is put, if the hive is not left to too much sun exposure.

### Foulbrood—Robbing

1. I have about 30 colonies of bees in 2-story hives. On account of inconveniences, I was delayed in taking their honey last fall until too late. Now the bees are located in the upper story with brood. Would it be O. K. to put bottom story on top, placing top story on the bottom?

2. I have one hive with American foulbrood. One afternoon I found bees were robbing the hive. I expect to find more foulbrood, but how shall I look for it?

3. When bees are robbing, do the robbers come from one hive, or do they come from numerous hives?

4. If the bees which did the robbing came from one hive I will expect to find foulbrood in that hive. But will I find the foulbrood in the other hives?.

5. What is the quickest and surest plan to combat the disease?

6. If I find both upper and lower story filled with healthy brood, would it be O. K. to confine queen in the lower story, separate the two, place another supply of full depth frames and foundation between the two? I presume they would draw the foundation in this way and prevent sagging of foundations.

ILLINOIS.

Answers.—The fact that the bees are now in the upper stories with brood indicates that you did not leave them too much honey. It will be all right to exchange the stories as you suggest, as soon as they become strong enough to take care of the space above them.

2. Open the hives, using a little smoke, and look for dead brood in the frames among the newly hatched larvæ.

3. Robbers may come from one hive or from a dozen. Usually, however, the robbing is done by one or two hives only.

4. You may find the disease pretty well scattered in your colonies. Examine them carefully. Some people get discouraged when they see foulbrood. But we have made larger crops from our bees after we found ourselves compelled to fight foulbrood than we ever did before.

5. For the treatment of foulbrood, you had better buy a text book, or write to the Department of Agriculture, Bureau of Entomology, Washington, D. C., for a Bulletin on the treatment of bee diseases. They have them for your use, and mine, too. It takes too much space in the Question and Answer Department to reply fully to this question.

6. Yes; but why confine the queen to the lower story before the honey crop is on? You had best let her raise all the brood she can before the crop.

### Foulbrood—Clipping Queens' Wings—Labeling Honeydew—Stretching of Combs

1. In localities where foulbrood exists bees frequently "rob out" infected colonies located in walls of houses, trees or neglected apiaries, therefore may not infected honey be stored in supers and be extracted before discovery? Would not the disease then be spread if the combs were placed on other colonies, (a) while wet, or, (b) the following season, though dry and clean?

2. On page 96, American Bee Journal, we read: "The only benefit in clipping the queen's wings is the prevention of her escape with a swarm." If one wishes to supersede all queens at, say two years of age, also to breed from queens showing the best records, would not clipping their wings be a benefit, enabling the apiarist to know if any queen had been superseded by natural impulse?

3. Should honey containing honeydew be labeled pure honey? Is it legal to so label it?

4. Do not combs in 11¼-inch depth frames give more trouble from stretching near top bar than those in 9⅛-inch frames?

COLORADO.

Answers.—Yes, in both cases. In fact that is probably the way in which American foulbrood has spread. European foulbrood appears to be much less dangerous in this respect.

2. Yes, clipping will enable one to know whether she is still the same queen.

3. Neither honeydew nor fruit juices should be sold as good honey. Better mark the goods by their real name.

4. We have had no more trouble from the deeper combs than from the shallow ones. Much depends upon the wiring.

### Increase—Re-Queening

1. Do you think the plan you give for increase on page 248 of "Fifty Years Among the Bees," as good as any of the other plans given therein? Will the queens be as good as those of any of your other plans?

2. How long should a colony be queenless before giving them a frame of brood containing a ripe queen-cell unprotected?

3. Can I put the nursery containing queen-cells in a colony having a laying queen?

4. Will the bees care for the cells?

5. Would you advise me to get a breeding queen, or to use what I think the best I have? Mine are mostly Italians, and I think I have some good ones. ILINOIS.

Answers.—1. As a rule, what is the best thing to do depends on circumstances. The fact that 9 weak colonies were built up into 56 good ones is proof that the plan was good, and under the circumstances probably no other plan would have been better. The young queens, being of best stock and reared in a strong colony with abundance of nectar coming in, should be of the best.

2. Twenty-four hours would be well.

3. Yes.

4. No; the bees would likely want to destroy the cells, but the nursery is supposed to protect them.

5. Use the best you have, unless you are pretty sure you can get something better.

### Running for Extracted Honey

1. I have 40 stands of bees in 8 and 10-frame hives that I have been running for comb honey and this year I am changing to extracted honey. I am going to use the shallow extracting super, wired, and with full sheets of foundation. Now will it be necessary to put a queen excluder between the super and hive body or not?

2. What size extractor should I get if I intend keeping about 100 stands right along?

3. How many frames should I place in the supers for surplus?

4. Would it be best to place the hives in the shade, or in the sun, to get the most surplus? IOWA.

Answers.—Yes, with the 8-frame. Not so necessary with the 10-frame.

2. Better get a 4-frame, but a 2-frame will do.

3. Put in one frame less than in the hive body.

4. Either way will do. We prefer to have them in the shade.

### Starting With Bees

1. I am just a beginner and have only 8 swarms and don't know much about them. What should I do when I take them out of the cellar? Should I open the hives and see how much honey they have?

2. Should I give them two bodies?

3. I've bought a lot of new hives and am going to put full foundations in all the frames. How should I give them to the bees?

4. I see you say not to put a new swarm in a hive with all full sheets of foundation in the hive. Should we put the bees in first and then the frames with the foundation? WISCONSIN.

Answers.—1. Take them out a warm day. Better not open the hives the first day, as they are more or less bewildered and may go to robbing. If they do not have enough, feed them.

2. No, not early in spring. Wait till they need more room.

3. Yes, put foundation in the frames ahead of need.

4. You can do one of two or three ways. Put two or three sheets of foundation in the body of the hive by removing some of the outer frames that have no brood. Or you can put a second story with foundation in the frames as soon as the crop opens, if the hives are strong. Or, when your bees swarm you can give them one or two combs from the mother colony and put frames of foundation in it in exchange. But don't put a swarm in a hive without frames and guides for the bees to follow.

### Getting Bees Out of a House

I have a swarm of bees in a house, but can't get them out. I have an idea to put a hive close to the entrance with full sheets of foundation and a brood comb with honey. On some warm day in May I will put a bee escape over the hole. Do you think this will be a good plan? Should they be supplied with a queen? Should the queen in the old hive be killed in about 60 days after I put the bee escape on? NEBRASKA.

Answer.—Your plan will not work. You would get only the field bees, and this would deprive the colony of its resources without getting the principal nest, the combs, brood, queen and young bees.

If the colony is in a frame house, you should be able to get to the combs by taking off a few weather-boards. Then you could probably smoke the bees and queen out and hive them just like a swarm. Then the combs could be cut out and transferred as has often been explained in these columns. In this way you might get a valuable colony without too much trouble. Putting the hive, in which you transfer them, close to the present location, and shutting all means of getting back to the house lining would control them. Then you could move them to another spot, by giving them a good smoking and drumming, some morning early, and placing them in the selected spot, with a slanting board in front of the entrance, so they might know they are in another spot, before flying away to the fields. Do all this when the weather is warm enough for them to fly.

### Control Diseases

I see they claim, in their advertisement of aluminum honey comb, control of all diseases. Please tell us how they do it, through your question department. MINNESOTA.

Answer.—By boiling it out. If it is done carefully, the metal comb is still retained. This refers to diseases in which it is necessary to destroy the contents of the combs, such as American foulbrood.

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## CLASSIFIED DEPARTMENT.

Advertisements in this department will be inserted for five cents per word, with no discounts. No classified advertisements accepted for less than 35 cents. Count each initial or number as one word.

Copy for this department must reach us not later than the 20th of the month preceding date of issue. If intended for classified department it should be so stated when advertisement is sent.

## BEES AND QUEENS

See Atwater's classified honey adv't.

QUEENS, ITALIAN QUEENS—I will have about 100 untested queens a month surplus, for June, July and August. Who wants them at $1 each? Less than 100, $1.25 each.
W. H. Moses, Lane City, Texas.

FOR SALE—Italian queens, three-band, untested $1.50 each; 6, $7.50; 12, $14. Tested queens, $3 each.
Rob't B. Spicer, Wharton, N. J.

FOR SALE—Untested golden Italian queens, $1.25 each. Tested, $2.50 each. Satisfaction guaranteed.
J. F Michael.
Winchester, Ind., R 1.

FOR SALE—Nuclei, two-frame, with Italian queen, $6 till June 15.
L. A. Schwoh.
3630 S. Jefferson Ave., St. Louis, Mo.

BOZZALLA LIGURIAN QUEENS—Obtain your queens from Italy. We take the risk of death in the mail. Select tested Italian queens posted direct from Enrico Bozzalla's apiaries to the customer, $3.50 each. Remit to sole agent, H. M. Stich, Riccartsbar Ave., Paisley, Scotland.

FOR SALE—If you need queens by return mail. I can furnish them from the very best honey gathering strain. They are the three-banded, leather colored; $1.50 each, or $15 per dozen; tested, $2 each. You can buy cheaper queens elsewhere, but you cannot get better queens anywhere. Delivery and satisfaction guaranteed.
Jasper Knight, Hayneville, Ala.

FOR SALE—Italian queens at $10 per doz., per 100, $70. Irish Bros., Doctortown, Ga.

FOR SALE—Simmons' queens, goldens and three-bands, bred from prize winner.. Also nucleus.
Allen Simmons, Claverack, N. Y.

FOR SALE—3-banded Dr. Miller and Walker's queens after June 10. (Am booked full until then.) $1.25 each, 6 for $7, 12 for $13; selects, 25c each higher.
Curd Walker, Jellico, Tenn., R 1, Box 18.

SWARTS' Golden queens produce golden bees of the highest quality. Untested $1.25 each, 6 for $7; tested, $2.50. Satisfaction guaranteed.
D. L. Swarts,
Lancaster, Ohio, Rt. 2.

FOR SALE—Nuclei of Italian bees with 1919 queens, 2-frame nucleus, $5.50; 3-frame, $6.75; nuclei without queens, 2-frame $4; 3-frame, $5.25. Can ship immediately.
Frank Bornhoffer, Rt. 17, Box 200-c,
Mt. Washington, Hamilton Co., Ohio.

FOR SALE—My famous three-banded Italian queens. $1.25 each, six for $7, from June 1 to November.
J. W. Romberger, Apiarist,
3113 Locust St., St. Joseph, Mo.

THE ITALIAN QUEENS OF WINDMERE are superior three-banded stock. Untested, $1.50 each; six for $8. Tested, $2 each. Select tested, $2.50 each. Virgins $1. Nuclei for sale
Prof. W. A. Matheny, Ohio University,
Athens, Ohio.

QUEENS—Italian queens of excellent stock will be ready to mail June 1. Untested, $1.50 each; 6, $7.50; 12, $14.
J. D. Harrab, R. No. 1, Freewater, Ore.

FOR SALE—Hardy northern bred Italian queens, untested, $1.50 each; tested, $2.50 each. Bees, 1-lb., $2.50. Write for quantity prices. Early delivery.
Clifton Smith, Salesville, Ohio.

FOR SALE—Hardy northern bred Italian queens, untested, $2 each, 6 for $11, May 15 to July 15. Select tested, $3, after June 1.
Dr. C. E. Sheldon, Coeur D'Alene, Idaho.

FOR SALE—Italian queens that will give results; untested, $2; tested, $3; breeders, $10.
A. Beyer, Krotz Springs, La.

TRYING IS KNOWING—I can tell you a lot of facts about Victor's Italian queens. I can tell you that they have all the good qualities that queen breeders ever claimed for their queens. But what of that? You can't know until you try it for yourself. Mated, $1.25 each; six, $7; twelve, $13.50, from June 1 to October 1. Julius Victor, Martinsville, N. Y.

FOR SALE—Italian queens. Prices for untested, in June, $1.50 each, $8.25 for six, $16 for twelve; tested, $2.50 each from July 1 to October 1; untested, $1.25 each, $7 for six, $13.50 for twelve; tested, $2 each; Virgins, 75c each. Mismated queens will be replaced if returned in 30 days. Dead queens will be replaced if returned to me by return mail.
R. B. Grout, Jamaica, Vt.

FOR SALE—I. F. Miller's strain Italian queen bees. Northern bred for business from my best superior breeders; gentle, roll honey in, hardy, winter well, not inclined to swarm, 3-banded. Queens a specialty; 26 years breeding experience. Satisfaction guaranteed. Safe arrival in U. S. and Canada. Untested, $1 40; 3, $3.75; 6, $7; 12, $13. select untested, $1.65; 3, $4.50; 6, $8.50; 12, $16.
I. F. Miller, Brookville, Pa., R. 2.

FOR SALE—Hardy Italian queens, $1 each
W. G. Lauver, Middletown, Pa.

FOR SALE—Three-banded Italian queens, ready June 10. Untested only, 1, $1 50; 6, $8; doz., $15. Book orders now.
Ross B. Scott, Rt. No. 4, La Grange, Ind.

FOR SALE—Superior California Queens—Western beekeepers may now secure our famous Italian queens at the following prices: One untested, $1.25; fifty untested, $57.50; one hundred untested, $100. Orders filled in rotation; first deliveries March 1, 1920.
Edson Apiaries, Gridley, Calif.

FOR SALE—Leather colored Italian queens, tested, until June 1, $2.50; after, $2; untested, $1.25; $13 per dozen. Root's goods, Root's prices.
A. W Yates,
15 Chapman St., Hartford, Conn.

FOR SALE—3-banded Italian queens from best honey-gathering strain obtainable; (no disease). Untested queens, $1.25 each; 6, $6.50; 12, $12. Select untested, $1.50 each; 6, $9; 12, $18. Tested, $2.50 each. Safe arrival and satisfaction guaranteed. Your orders filled promptly.
W. T. Perdue & Sons,
R. No. 1, Fort Deposit, Ala.

FOR SALE—Highest grade 3-banded Italian queens, ready June 1. Queen and drone mothers are selected from stock of proven worth in hardiness, gentleness, honey production and disease-resisting qualities. Untested, each, $1.25; 6, $6.50; 12, $12; 50, $47.50; 100, $90. Your correspondence will receive prompt attention, and I guarantee satisfaction.
A. E. Crandall, Berlin, Conn.

BOOK YOUR ORDERS for QUEENS now—Goldens, $2; tested, $3; banded, $1.50; tested, $2.50; six or more 10 per cent less.
Clover Leaf Apiaries, Wahoo, Neb.

"QUALITY" THREE-BANDED ITALIANS from excellent stock; untested queens, 1, $1.50; 6 for $7.50; 12 for $13.50; 50 for $55; 100 for $100.
N. J. James,
1185 Bird Ave., San Jose, Calif.

MOTT'S Northern Bred Italian Queens— I have breeding mothers place in the south for April and early May queens. Plans "How to Introduce Queen and Increase," 25c. If you want beauty with the best of summer and winter laying birds, try a setting of my Golden Campines.
E. E. Mott, Glenwood, Mich.

FOR SALE—A. I. Root strain of resisting and honey-gathering, leather-colored Italian queens. Untested queens, $1.50 each, 25 or more $1.40. Tested, $2.50 each, 25 or more, $2.25. Select tested, $3. For larger amounts write.
A. J. Pinard, Morgan Hill, Calif.

1920 PRICES on nuclei and queens, Miller strain. Queens, untested, $1.50 each. $15 per doz.; tested, $2.00 each, $22 per doz. One-frame nuclei, $3; two-frame, $5; three-frame $6.50, without queens, f. o. b. Mason, Miss. Five per cent discount in lots of 25 or more. We have never had any bee or brood disease here. Will have no queens except with nuclei, until June 1. Safe arrival and satisfaction guaranteed.
Geo. A. Hummer & Sons Prairie Point, Miss.

1920 PRICES for "She Suits Me" queens. Untested Italian queen, from May 15 to June 15, $1.50 each. After June 15, $1.30 each; $12.50 for ten; $1.10 each for 25 or more.
Allen Latham, Norwichtown, Conn.

FOR SALE—After April 15, our golden Italian queens, untested, one $1.50 or $15 per doz.; select untested, one, $1.75 or $18 per doz.; tested, $3 each. Safe arrival guaranteed.
Tillery Bros.,
R. 5, Georgiana, Ala.

FOR SALE—Goldens that are true to name. Select untested, one,$1.50; six, $7.50; 12, $18.50; 50, $55; 100, $100.
Garden City Apiaries, San Jose, Calif.

FOR SALE—Golden and three-band queens. Untested, April, May and June delivery, $1.25 each; $12.50 per doz. Satisfaction.
R. O. Cox, Rt. 4, Greenville, Ala.

BEES BY THE POUND, ALSO QUEENS—Booking orders now. Free circular gives prices, etc. See larger ad elsewhere.
Nueces County Apiaries, Calallen, Texas,
E. B. Ault, Prop.

BEES AND QUEENS from my New Jersey apiary.
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1Atf 84 Cortland St., New York City.

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See Atwater's classified honey adv't.

WE ARE PAYING 38 cents in cash and 40 cents in trade for bright yellow beeswax, f. o. b. your station, in hundred-pound lots or over. The Foster Honey and Merc. Co.,
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HONEY—Supply your customers, finest alfalfa-clover honey, extra strong cases, probably ready in July.
E. F. Atwater, Meridian, Idaho.

FOR SALE—We have a limited amount of our crop white clover, extracted basswood honey, all packed in new 60-lb. cans, 2 to the case. Write for prices.
D. R. Townsend, Northstar, Mich.

FOR SALE—Clover and buckwheat honey in any style container (glass or tin). Let us quote you. The Deroy Taylor Co.,
Newark, N. Y.

WANTED—White clover or light extracted honey. Send sample; state how honey is put up and lowest cash price delivered at Monroe; also buy beeswax.
E. B. Rosa, Monroe, Wis.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendering. Fred W. Muth Co.,
204 Walnut St., Cincinnati, Ohio.

WANTED—Comb and extracted honey.
The L. H. Snider Apiaries, Auburn, Ind.

## FOR SALE

See Atwater's classified honey adv't.

FOR SALE—Cedar or pine dovetailed hives; also full line of supplies, including Dadant's foundation. Write for catalog.
A. E. Burdick, Sunnyside, Wash.

FOR SALE—"Superior" Foundation (Weed process). Quality and service unexcelled.
Superior Honey Co., Ogden, Utah.

FOR SALE—About 50 colonies of bees, mostly Italians; also complete hives, supers, comb and extracted, and other used equipment. Bees and supplies are located near Lansing, Mich. Duplicate volumes A. B. J. and Gleanings also for sale or exchange. F. Eric Millen,
O. A. C., Guelph, Ontario, Canada.

FOR SALE—Bee supply business, including equipped mill for the manufacture of bee hives; also a small warehouse and 80-colony apiary. This is a splendid opportunity for the right party. The business is well established and profitable, but owing to reasons which will be fully explained, I desire to retire. Don't answer this add unless you mean business and have or can command a few thousand dollars. Address, A. E. Burdick, Sunnyside, Wash.

## WANTED

See Atwater's classified honey adv't.

WANTED—Honey, in 5 or 10-lb. cans.
Lang, 1609 Dayton St., Chicago.

WANTED—One honey extractor. State particulars in first letter.
P. C. Forgard, Lake Preston, S. D.

WANTED—Beeswax The L. D. Caulk Co.,
Milford, Delaware.

WANTED—Honey—50,000 lbs. bulk comb and extracted 1920 crop, produced and packed according to my instructions and specifications in containers furnished by me. Write today for instructions and contract blank.
W. A. Hunter, Terre Haute, Ind.

WANTED—Beeswax. At present we pay 40 cents per pound in cash and 42 cents in trade for clean, yellow wax, delivered Denver.
The Colorado Honey Producers' Association,
Denver, Colo.

WANTED—Your old combs, cappings and slumgum to render into beeswax. We get enough more wax with our well equipped presses to pay for our work.
Dadant & Sons, Hamilton, Ill.

WANTED—Your order for "Superior" Foundation. Prompt shipments at right prices.
Superior Honey Co., Ogden, Utah.

WANTED—Undamaged copies of February, 1920 American Bee Journal. Will pay 10c a piece. When mailing wrap so the entire copy is covered. American Bee Journal,
Hamilton, Ill.

WANTED—Extracted honey in white and amber grades. State lowest price; how packed. Send sample. Harmony Bee & Honey Co.,
White Bear Lake, Minn.

## SITUATIONS

See Atwater's classified honey adv't.

WANTED—One experienced man, and students or helpers, in our large bee business; good chance to learn. Modern equipment and outfit, including auto truck; located near summer resorts. Write, giving age, height, weight, experience, reference and wages wanted.
W. A. Latshaw Co., Clarion, Mich.

WANTED—Man for season of 1920 to work with bees. State age, experience and wages. We furnish board. Opportunity for permanent situation to right man. Also want man to work in shop, put up honey and do general shop work and make deliveries.
The Rocky Mountain Bee Co.,
Box 1319, Billings, Mont.

WANTED—One or two good queen-rearing men to begin work February 15, 1920.
Nueces County Apiaries, Calallen, Texas.

## SUPPLIES

See Atwater's classified honey adv't.

FOR SALE—50 8-frame comb-honey supers, dovetailed and painted, at 55c each.
A. De Koker, Jr., Thayer, Ind., R. 1.

FOR SALE—80 two-story ten-frame hives, nailed and painted, metal cover, frames nailed and wired. New hives, 5, $25, used one season, 5, $21.50. 100 ten-frame bodies, K. D., 5, $4 1,000 frames, K. D., 100, $4.25; 200 lbs. medium brood foundation, 10 lbs, 75c; 50 lbs., 70c; 50 new wood and 7 wire excluders, 5 for $3.75; 30 cases of two 5-gallon cans, per case, 60c, f. o. b. Watertown, Minn. 265 cases 15-oz. glass jars in paper cases, 10 cases, $14; 25 cases, $34, f. o. b. Des Moines, Iowa.
C. E. Dustman, Watertown, Minn.

For Sale—200 hives with covers and bottom boards, 8 and 10-frame 75 with full drawn out frames (Hoffman); 50 honey cases, 25 summer stands, 400 supers, 50 for extracting, with drawn out foundation; 200 Hoffman frames in flat ; 50 5-gallon honey cans, new; 50 Page feeders, 1 Doolittle wax extractor, 1,000 extra fence separators, 25 drone and queen traps, 50 wood-wire honey boards, 50 zinc honey boards, 2-frame extractor, 1 comb bucket, 50 bee escapes, 2 swarm baskets, 1 50-gallon honey tank, 1 decapping tank, 25 hives of bees, Italian; 5 double-walled hives. All Root goods, some never used, others used one season. Several other goods too numerous to mention. Two thousand dollars' worth for $700. Must be sold all together.
Charles Hamel,
233 North St., North Adams, Mass.

FOR SALE—Danzenbaker 10-frame shallow extracting supers, new, with frames; will discount. D. S. Durall, Hurdland, Mo.

FOR SALE—We make Cypress hives, frames, supers, feeders. Write us for prices. Honey barrels for sale.
Sarasota Bee Co., Sarasota, Fla.

FOR SALE—10-frame dovetailed hives in lots of one to fifty, very cheap.
Wm. Craig, Aitkin, Minn.

SPECIAL PRICE overstock sale on 1-story, 8-frame S. W. hives. Shipping cases to hold 24 sections 4¼x4¼x1½ Hoffman frames 1½-inch spacing. Modified frames, Jumbo depth, 1½-inch spacing. Ask for quotations.
A. G. Woodman Co., Grand Rapids, Mich.

FOR SALE—Good second-hand double-deck comb-honey shipping cases for 4¼x4¼x1⅞ sections, 25 cents per case, f. o. b. Cincinnati; terms cash with order.
C. H. W. Weber & Co.,
2146 Central Ave., Cincinnati, O.

FOR SALE—Good second-hand empty 60-lb honey cans, two cans to the case, at 60c per case f. o. b. Cincinnati. Terms, cash with order. C. H. WEBER & CO.,
2146 Central Ave., Cincinnati, O.

SEND us a list of goods wanted and will quote you lowest prices. We are the money-saving house. Price list free. Try us.
H. S. Duby & Son, St. Anne, Ill.

## MISCELLANEOUS

See Atwater's classified honey adv't.

IF you know anyone wishing sugar at once, please write me in the meantime.
Edw. A. Winkler, Joliet, Ill.

WRITE for shipping tags and our prices for rendering your old combs, cappings, etc. We guarantee a first-class job.
The Deroy Taylor Co., Newark, N. Y.

FOR SALE—Silver Spangled Hamburg eggs and fine cockerels.
Elias Fox, Union Center, Wis.

BLACK SIBERIAN HARES—Enormous sizes, delicious meat and beautiful fur. Write for information and prices.
Siberian Fur Farm, Hamilton, Canada.

**Good Tires Cheap**

**6,000 MILES GUARANTEED**

Serviceable tires are reconstructed in our factory by our own dependable process and guaranteed for 6,000 miles. Unequalled in price, quality and workmanship.

**RELINER FREE WITH EACH TIRE**

| SIZE | TIRES | TUBES | SIZE | TIRES | TUBES |
|---|---|---|---|---|---|
| 30x3 | 5.40 | 1.50 | 34x4 | 8.65 | 2.60 |
| 30x3½ | 6.40 | 1.65 | 34x4½ | 9.90 | 2.90 |
| 31x3½ | 6.65 | 1.76 | 35x4½ | 10.90 | 3.05 |
| 32x3½ | 6.90 | 1.90 | 36x4½ | 11.40 | 3 30 |
| 31x4 | 7.90 | 2.15 | 35x5 | 12.40 | 3.40 |
| 32x4 | 8.15 | 2.30 | 36x5 | 12.60 | 3.55 |
| 33x4 | 8.40 | 2.40 | 37x5 | 12.55 | 3.65 |

**Tubes Guaranteed Fresh Stock** In ordering state whether S. S., Clincher, plain or non-skid. Take 5 per cent discount from above prices for cash with order, or send $2 deposit on each tire and $1 on each tube, balance C. O. D. Tires shipped immediately subject to examination. ORDER TODAY.

**Serviceable Tire Corp., 171 E. 33rd St., Chicago**

## BEE SUPPLIES

We carry a complete stock of supplies at all times, and can make prompt shipments. Our prices will interest you.

**Send Us Your Inquiries**

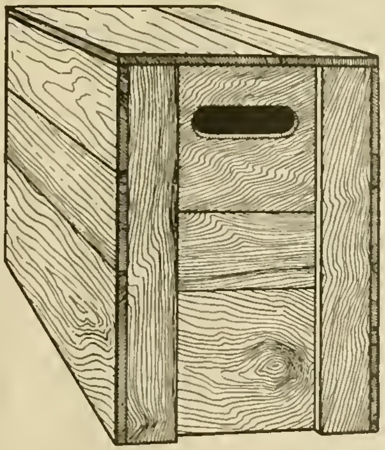
**A. H. RUSCH & SON CO.**
**Reedsville, Wis.**

## THAGARD'S ITALIAN QUEENS—Bred for Quality

| | April 1st to July 1st | | | July 1st to Oct. 1st | | |
|---|---|---|---|---|---|---|
| | 1 | 6 | 12 | 1 | 6 | 12 |
| Untested | $1.50 | $ 7.50 | $13.50 | $1.25 | $ 6 00 | $12.00 |
| Select Untested | 1.75 | 9.00 | 16.00 | 1.50 | 8.00 | 13.00 |
| Tested | 2.50 | 13.00 | 24.00 | 2.00 | 12.00 | 20.00 |
| Select Tested | 5.00 | 22 00 | 41.50 | 3.50 | 20.00 | 36.00 |

**V. R. THAGARD, Greenville, Ala.**

TIN CANS AND GLASS JARS



Our season's supply of tin cans and glass jars is on hand. We can supply your needs on receipt of your order.

Be forehanded. Freights are slow. Order soon for assurance that your tin cans will reach you in proper time for your needs.

We call your special attention to the accompanying illustration. The cases for two five-gallon cans are of the best. Made of three-eighths inch lumber, with seven-eighths inch heads, and the heads of the boxes are cleated to make the very strongest package possible. We recommend them as being the very best on the market.

Friction top cans in any kind of case you may require, 2½-lb., 5-lb., 10-lb., in cases of 6, 12, 24, 50 and 100.

We handle 6-ounce jelly glasses, 2 dozen to the case.

We also call your special attention to our 16-ounce screw cap jars. A tall package that is a favorite with everyone who has used or seen it. These are packed 2 dozen in a case. We can recommend them most highly.

Write today for our prices on all these cans and jars. They will interest you.

Be sure to ask also for our honey label catalog.

**DADANT & SONS, Hamilton, Ill.**

THREE BAND ITALIANS
TESTED DISEASE RESISTORS

PRICES

| | June 15 to July 15 | | | July 15 to Oct. 1 | | | |
|---|---|---|---|---|---|---|---|
| | 1 | 6 | 12 | 1 | 6 | 12 | 100 |
| Untested | $1.50 | $8.00 | $15.00 | $1.30 | $7.50 | $13.50 | $110.00 |
| Select untested | 1.75 | 9.00 | 16.00 | 1.60 | 8.00 | 14.00 | 115.00 |
| Select tested, any time after June 20 | | | | 3.00 | 16.00 | 29.00 | |
| Select day-old virgins, after June 1 | | | | .60 | 3.50 | 6.50 | 50.00 |

**D. A. DAVIS, Birmingham, Mich.**
216 Greenwood

Read *"THE BEEKEEPER"*

The only Canadian bee publication. Keeps beekeepers closely in touch with Apicultural conditions in Canada. It is the official organ of the Beekeepers' Associations for the three provinces—Ontario, Manitoba and New Brunswick. Beekeeping and horticulture are effectively combined to make a live, attractive and practical publication.

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Send for a free sample copy

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QUEENS

Quirin's Improved Superior Italian Bees and Queens. They are Northern Bred and Hardy. 25 years a Queen Breeder.

| PRICES | Before July 1 | | | After July 1 | | |
|---|---|---|---|---|---|---|
| | 1 | 6 | 12 | 1 | 6 | 12 |
| Select untes'd | $1.50 | $ 8.00 | $14.00 | $1.00 | $ 5.50 | $10 |
| Tested | 2.00 | 10.00 | 18.00 | 1.50 | 8.00 | 14 |
| Select tested | 2.50 | 14.00 | 25.00 | 2.00 | 10.00 | 18 |

**BREEDERS**—The cream from our entire stock of outyards, $5 each, usually we can send all queens promptly after June 10th.

Breeders, select tested and tested queens can be sent out as early as weather will permit.

Send for testimonials. Orders booked now.

No bees sold except with breeders, when a two-comb nuclei will be furnished for $5.

**H. G. QUIRIN, Bellevue, O.**

QUEENS—FINE ITALIAN—QUEENS
From Selected Bred-up Stock

Now booking orders for June delivery at following prices:

| | 1 | 12 | 100 |
|---|---|---|---|
| Untested | $1.35 | $15.00 | $110.00 |
| Select Untested | 1.75 | 18.00 | 150.00 |
| Tested | 2.50 | 24.00 | 200.00 |

Pure mating, safe arrival and satisfaction guaranteed.

A few more package bees for June delivery.

**E. A. HARRIS, Albany, Ala.**

QUINN'S QUEENS OF QUALITY

Have no superiors—"There's a reason." Are Mendelian bred, good qualities accentuated. Gray Carniolans, Gray Caucasians, most gentle of all, prolific, hardy, vigorous, disease-resistant, white comb builders—they deliver the goods.

ITALIANS, 3-banded, line bred, pedigreed; need no boosting; they speak for themselves.

**CHAS. W. QUINN, Sabot, Va.**

BEE SUPPLIES
FALCON LINE

Best goods made. Get our big discount sheet before buying.

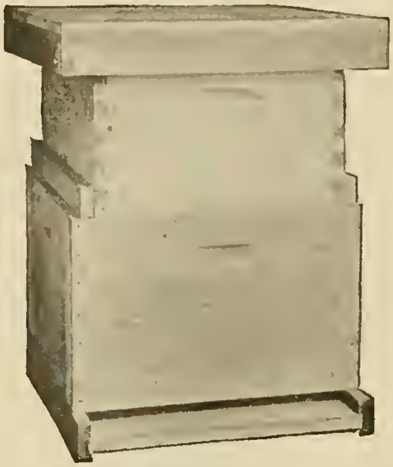
**C. C. CLEMONS BEE SUPPLY COMPANY**
128 Grand Ave.
Kansas City Mo.

HAND-MOORE QUEENS

How many of you, let me see, have tested out the Hand-Moore bee? Our bees get honey by the ton, and honeys what brings the mon'. So if you want your honest share, and are not content with just the tare. Buy Hand-Moore queens, that's what I say, and do it, yes, and right away. Untested only, $2 each.

**W. A. LATSHAW CO., Clarion, Mich.**

# MODIFIED DADANT HIVE



Glance at this illustration to compare this hive with "Standard" Langstroth hive.

Your present brood equipment can be put above the Modified Dadant hive used as full-depth supers.

You get 40 per cent greater brood-comb area than in the "Standard" ten-frame Langstroth.

You get deep frames, large one-story brood-nest, frame space ventilation, excellence in wintering, swarming easily controlled.

**MODIFIED DADANT HIVE FEATURES**

1. Eleven frames, Langstroth length, Quinby depth.
2. Frames spaced 1½ inches for swarm control.
3. Extracting frames 6¼ inches deep.
4. Dovetailed body, regular reversible bottom and metal roof cover with inner cover.
5. Langstroth "Standard" equipment easily used with this hive.

**For free booklet write any distributor of Lewis "Beeware," or to**

**G. B. LEWIS COMPANY, Watertown, Wisconsin**
**DADANT & SONS, Hamilton, Illinois**

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**DO YOU READ**

## THE DOMESTIC BEEKEEPER

(Successors to the Beekeepers' Review)

Now in its 33rd year; 32 pages; monthly; $1.00 per year.

We haven't room here to tell you all the reasons why we believe you would find a subscription to the **Beekeeper** a good investment, but we printed some extra copies for April and May and if you will send us 10c (stamps or silver) for a copy of the May number we will mail it promptly and include, free, a copy of the April number. Or send us 50c for the magazine the balance of this year—7 months.

We have some attractive book clubbing offers we would like to tell you about. Let's hear from you **today!**

**THE DOMESTIC BEEKEEPER, Almont, Mich.**

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**FLORIDA BEES AND QUEENS**

The first part of April I will be fully ready to fill orders for queens and bees as follows: Two-frame nuclei with untested queen, $6; untested queens, $1.50 each; tested, $2. From my long-tested and best Italian stock.

BEEKEEPERS' SUPPLIES—DADANT'S FOUNDATION

A complete stock of everything for the Dixie beekeepers, right here at home. My cypress catalog of cypress hives and hive parts will interest you in prices.

DIXIE BEEKEEPER

This monthly publication tells of Dixie as a bee country and how we are keeping bees here; $1 a year. Sample copy free.

**J. J. WILDER, Waycross, Georgia**

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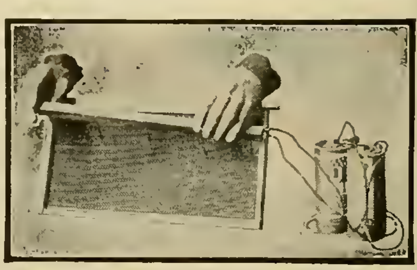

**ELECTRIC IMBEDDER**

**Price without Batteries $1.25**
Not postpaid.

**Actually cements wires in the foundation. Will work with dry cells or with city current in connection with transformer. Best device of its kind on the market.**

**For sale by all bee supply deelers**

**Dadant & Sons,** **Manufacturers HAMILTON, ILL.**

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QUEENS FOR SALE

Golden and 3-band Italians (the kind that fill from 2 to 6 supers). Untested (either kind), $2 each, $11 for 6; $45 for 25. No discount for 50 or 100 lots Tested, $3 each, $16 for 6, $30 for 12. Full colonies of bees (with queen), $12 and $15 each for 8 and 10-frame Root Co., hives, without supers.

**MISS LULU GOODWIN,**
**Mankato, Minn., Box 294.**

## PRICES OF QUEENS

| | Nov. 1 to June 1<br>1 | <br>6 | <br>12 | June 1 to Nov. 1<br>1 | <br>6 | <br>12 |
|---|---|---|---|---|---|---|
| Untested | $2.00 | $9.00 | $16.80 | $1.50 | $8.00 | $14.50 |
| Select untested | 2.25 | 10.50 | 18.00 | 2.00 | 9.50 | 16.00 |
| Tested | 3.00 | 16.50 | 30.00 | 2.50 | 12.00 | 22.00 |
| Select tested | 3.50 | 19.50 | 36.00 | 3.00 | 16.50 | 30.00 |

**Breeders $7.50 to $15.00**

Queens for export will be carefully packed in long-distance cages, but safe delivery is not guaranteed.

"The queen that I got from you last season made honey when the other bees were taking lunch to the fields with them (when they went at all)". H. M. TICHENOR, Centertown, Ky.

2058 Yonge St., Toronto Canada March 19, 1920.

Friend Davis:

The colonies headed by your queens are through this far in fine shape. It was a pleasing sight to see them take their first flight (after 4 months) this last week. What is the price of queens to us folks on this side this year, and when could you start to send me up some? A reply would oblige Yours Respectfully,

P. F. OLIVER.

**No Nuclei, Full Colonies or Pound Packages.**

**BEN G. DAVIS, Spring Hill, Tenn.**

# MARSHFIELD GOODS

## BEEKEEPERS

We manufacture millions of **sections** every year that are as good as the best. The **cheapest** for the **quality; best** for the price. If you buy them once, you will buy again.

We also manufacture **hives, brood-frames, section holders** and **shipping cases.**

**Our Catalog is free for the asking**

**MARSHFIELD MFG. CO., Marshfield, Wis.**

## BEEKEEPERS' SUPPLIES—QUALITY AND SERVICE

Now is the time to order your season's supply of Bee Material so as to have them ready for the honey flow. For lack of hives and other goods, you cannot afford to let your bees fly away, **bees are valuable.** We have everything raquired for practical beekeeping. Our goods for ideal of quality, quality of workmanship. Our 1920 catalog is now ready to send out, send for one, it is full of good stuff.

**AUGUST LOTZ CO., Boyd, Wis.**

## ITALIAN QUEENS

The Old Reliable Three-Banded Italians. The best allround bee to be had. Queens ready to mail April 1. Will book orders now. Will guarantee safe arrival in United States and Canada. Prices for April and May:

Untested., $1.50; 6, $8; 12, $15
Tested, $2.25; 6, $12; 12, $22.
Select tested. $3 each.

Descriptive circular and price list free.

**JOHN G. MILLER,**
723 C Street, Corpus Christi, Texas.

## PORTER BEE ESCAPE SAVES HONEY TIME MONEY

PORTER
BEE ESCAPE
PATENTED

**For sale by all dealers.**
**If no dealer, write factory**
**R. & E. C. PORTER, MFRS.**
**Lewistown, Illinois, U. S. A.**
(Please mention Am. Bee Journal when writing)

Send for Catalogue of Honey Labels and Stationery.
American Bee Journal

# BEES

We furnish full colonies of Italian bees in double-walled hives, single-walled hives, shipping boxes and 3-frame nucleus colonies.

**I. J. STRINGHAM, Glen Cove, N. Y.**
**NASSAU, CO.**

## WESTERN BEEKEEPERS!

We handle the finest line of bee supplies. Send for our 68-page catalog. Our prices will interest you.

**The Colorado Honey Producers' Association, 1424 Market St.,**
**Denver, Colo.**

Write for Price List and Booklet descriptive of

**HIGH-GRADE**
**Italian Queens**

**JAY SMITH**
**Route 3**
**Vincennes, Ind.**

## HERE THEY ARE MR. BEEKEEPER

**at Newark, Wayne Co., N. Y., ready to answer your call. The best of everything. Just read this list:** Lewis Beeware, Sections, Shipping Cases, Frames, Hives, Hershiser Wax Presses and other supplies, Dadant's Unexcelled Foundation, all standard weights and sizes; also the Electric Wire Imbedder, Bingham Uncapping Knives, including steam heated, with oil stoves and generators. Bingham Smokers, all sizes, with geunine leather bellows; Root's Extractors, all sizes of hand and power machines; Bee Books, written by all leading authors in beedom.

All sizes of Friction Top Pails, and also 60-lb. Cans, new and second hand. Also Cement-coated Nails for nailing beehives and supplies; and all sized spools of Tinned Wire, Bee Brushes, Feeders, Queen-Rearing Cages, Bee Gloves and Capping Melter, and all practical supplies you will need.

A market for your honey or wax and a plant to render your old combs and cappings.

Over 1,000 beekeepers took advantage of this service station at Newark in 1919 for the first time. Now all together for a greater 1920.

New catalog free. Our discounts will save you money.

THE DEROY TAYLOR CO., Newark
(Wayne Co.) New York.

## BEEKEEPERS ATTENTION

You can make your business more profitable and easier to handle through the proper use of modern equipment. This is supplied in LEWIS BEEWARE by

**WESTERN HONEY PRODUCERS**
**SIOUX CITY, IOWA**

**SEND LIST OF YOUR NEEDS OR REQUEST FOR NEW CATALOG TO DEPT. B**

## ROOT QUEENS

| | June | July to Oct. 1 |
|---|---|---|
| Untested | $2.50 | $2.00 |
| Select Untested | 3.00 | 2.50 |

**QUANTITY DISCOUNTS**

| | |
|---|---|
| 12 Queens | 10% Disconnt |
| 25 " | 15% " |
| 50 " | 20% " |
| 100 " | 25% " |

**THE A. I. ROOT COMPANY, Medina, Ohio, U. S. A.**

## QUEENS, SELECT THREE-BANDED ITALIANS

Reared from the best mothers and mated to select drones.

**Prices of Queens**

| | May 1st to June 1st | | | June 1st to July 1st | | | July 1st toNov. 1st | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1 | 6 | 12 | 1 | 6 | 12 | 1 | 6 | 12 |
| Untested | $2.00 | $ 9.00 | $16.80 | $1.50 | $ 8.50 | $14.50 | $1.30 | $ 7.50 | $13.50 |
| Select Untested | 2.25 | 10.50 | 18.00 | 2.00 | 9.50 | 16.00 | 1.75 | 8.50 | 15.00 |
| Tested | 3.00 | 16.50 | 30.00 | 2.50 | 12.00 | 22 00 | 2.00 | 10.00 | 18.50 |
| Select Tested | 3.50 | 19.50 | 36.00 | 3.00 | 165.00 | 30.00 | 2.75 | 15.00 | 27.00 |

Orders booked now for May delivery. Pure mating, safe arrival and entire satisfaction guaranteed. Wings clipped free. Write for descriptive circular.

**HARDIN S. FOSTER, Columbia, Tenn.**

# Crop and Market Report

Compiled by M. G. Dadant

## NET LOSS AND CONDITIONS

It is remarkable to note throughout the whole country the heavy loss of bees during the past year. This, of course, is owing to the extremely prolonged cold winter and prolonged spring cold. The winter loses have been augmented by a very large spring loss through weakening queens and through starvation.

Throughout the whole eastern half of the country north of the Ohio River and east of the Mississippi, losses seem to be very heavy. In the New England States they will run nearly 50 per cent, in Pennsylvania and New Jersey and New York the loss will be from 20 to 40 per cent and throughout the rest of the northeast, probably from 5 to 15 per cent, depending upon condition of bees in the fall and upon method of wintering. Of course, the beekeepers who protected their bees in the best manner will have the smallest loss.

Throughout the southeast the losses are small, ranging from 4 to 10 per cent, while Texas reports a loss of from 5 to 15 per cent, with an average of not over 10 per cent. The north half of the Rocky Mountain territory reports loss of from 10 to 35 per cent, whereas southern Colorado, Arizona and New Mexico will not have much over 5 per cent loss. Wyoming and Nevada and Utah also have heavy loss, probably averaging 25 per cent, as will Washington and Oregon. The loss in California is considerably less, probably not averaging over 7 or 8 per cent.

## PLANTS AND PROSPECTS

Throughout the New England States where bees are in poorest condition, prospects are best. New York and Pennsylvania report very fair prospects. Ohio has only a fair prospect, while Indiana and Illinois clover was greatly injured by last year's drought. Michigan is in almost the same shape, except that she has other honey sources outside of clover. Wisconsin and Minnesota seem to be much improved over last year. In Kansas and Nebraska prospects are fair, although very late, and South Dakota seems very good. Western Iowa will have a very good crop, weather permitting, whereas eastern Iowa, like Illinois, was burned out too late last year to permit of a good clover crop.

The bees in the South are already harvesting honey and expectations are for an average crop there. Texas, fortunately, reports much above the average, and some reports are that there will be the largest crop for a long time. Mesquite flow is on and prospects for both mesquite and horsemint seem very good, indeed.

In California some report normal crops this year while others say there will not be over 50 per cent of normal. It is very probable however, that weather conditions permitting, southern California will have at least as good a crop as last year, while northern California may not equal last year's percentage.

## HONEY—SALE

There is very little honey left on hand to compete with the new crop. In fact, throughout practically the whole country the honey crop has left the hands of the producer and is in the hands of the wholesaler.

The whole northeast section reports no honey on hand, except in the large centers and a few scattering lots on hand in the southeast and in the Rocky Mountain regions. The three large co-operative associations of the West and Southwest have no honey left except what little new crop is coming in to the Texas and California exchanges. This is being sold readily.

In the larger markets there is still a little honey on hand, but in heavy demand owing to the sugar shortage. One commission merchant in New York City reports thirty carloads of Idaho honey for sale at a price of 23c f. o. b. New York.

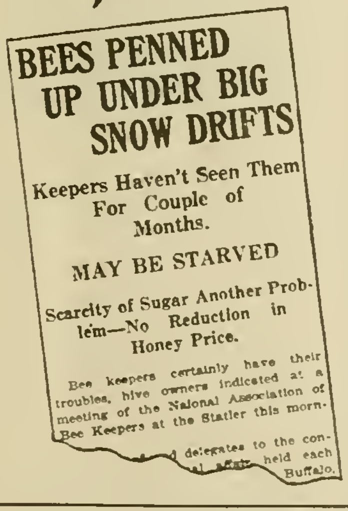
Besides these reports of new honey from Georgia and Florida selling at from 12½ to 14c for No. 2, with 17c for No. 1 honey. This they say is the highest prices they have gotten in the last twelve months. West Indian and Cuban honey is coming in to the New York market at a price ranging from 12 to 16c, according to quality.

We should not lose sight of the sugar markets in basing any ideas as to what the honey price will be for the coming season. Sugar futures have been rising practically every day during the last three or four weeks and the wholesale price of sugar is now quoted at from 20 to 28c per pound Sugar is selling locally at 32c per pound from retail stores.

Reliable sources report that there is not much danger of the sugar price dropping to amount to anything for the next six or eight months. In fact sugar futures would indicate that the price will hold good up until December or January. It is doubtful, therefore, whether the price of honey will be any lower than it is at present. which would indicate a good demand and a rising market.

Orange honey is selling in the California markets at about 20c per pound. Some are holding for 22c.

The new Texas honey is selling at about 22c for extracted and 24c for bulk comb, for a limited quantity which has just been placed upon the market.



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BEES PENNED UP UNDER BIG SNOW DRIFTS

Keepers Haven't Seen Them For Couple of Months.

MAY BE STARVED

Scarcity of Sugar Another Problem—No Reduction in Honey Price.

Bee keepers certainly have their troubles, hive owners indicated at a meeting of the National Association of Bee Keepers at the Statler this morn-

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Buffalo.

Bee insurance

"falcon" bee supplies are an assurance of the right start towards success for your colonies this summer, just as they are insurance against the severest winter weather.

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Behind every queen, hive, super or pound of foundation we sell stands our guarantee of "absolute satisfaction or money back."

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**FALCONER, N. Y.**

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Mr. Honey Producer:

Our business means more to us than simply selling supplies. Goods that make good, and a *Service* that really *Serves*, that's what we have to offer you, and as never before you are needing these two things today.

You know what you need. Tell us about it,---we will *serve* you if we can, but if we haven't what you want, and can't get it for you, we will tell you so frankly. It's a hundred to one that we have anything you need at this time. Your request brings it hurrying along, over the shortest possible route, in shortest possible time.

May we *serve* you?

Very truly yours,

**THE A. I. ROOT CO. OF IOWA**
**COUNCIL BLUFFS, IOWA**

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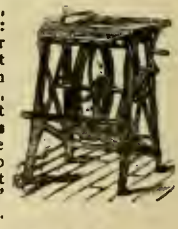

Read what J. E. Parent, of Chariton, N. Y., says: "We cut with one of your Combined Machines last winter 50 chaff hives with 7-in. cap, 100 honey-racks, 500 frames and a great deal of other work. This winter we have a double amount of hives, etc., to make with this saw. It will do all you say of it." Catalog and price list free.

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PAT. JULY 30, 1918

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*Made for the Huffman Brood Frames.* A combined Nailing, Wiring and Wedge Clamping Device. Has been tried and is guaranteed to do accurate work.

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**(But let the gentleman tell it himself:)**

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## THE THRIFTY KIND

Twenty-eight years of select breeding brings these bees up to a standard surpassed by none, but superior to many.

Place your order now for June delivery of queens. We have booked as many orders for pound bees as we can handle this season.

PRICES AFTER JUNE 1

| | 1 | 6 | 12 | 100 Each |
|---|---|---|---|---|
| Untested | $1.50 | $ 7.50 | $13 50 | $1.00 |
| Select Untested | 1.75 | 9.00 | 16.50 | 1.25 |
| Tested | 2 50 | 13.00 | 24.50 | 2.00 |
| Select Tested | 4.00 | 22.00 | 41.50 | 3.35 |

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**W. J. FOREHAND & SONS, The Bee Men**
**Fort Deposit, Alabama**

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*Riverton, Wyo., Jan. 31, 1920*

***The A. I. Root Company,***
***Medina, Ohio***

*Gentlemen:*

*I am writing you regarding the coming crop of honey. I feel that I am entitled to a first chance to sell you my crop, for I buy almost everything I use in my business in the bee line of you. I will ship you my entire crop of honey at the market price or a price we agree upon. I have 1,000 colonies, and if I have a fair crop I should have from 100,000 to 150,000 lbs.*

*There is one other reason I am writing you at this date, and that is I am counting on being up in Alaska and Yukon territory when my crop of honey is being harvested, and I feel that I can absolutely trust The A. I. Root Company for fair dealing and honesty whether I am in Alaska or at home.*

*Yours truly,*
*B. M. CARAWAY*

**THE A. I. ROOT COMPANY**
**MEDINA, OHIO**

# AMERICAN BEE JOURNAL

JULY, 1920

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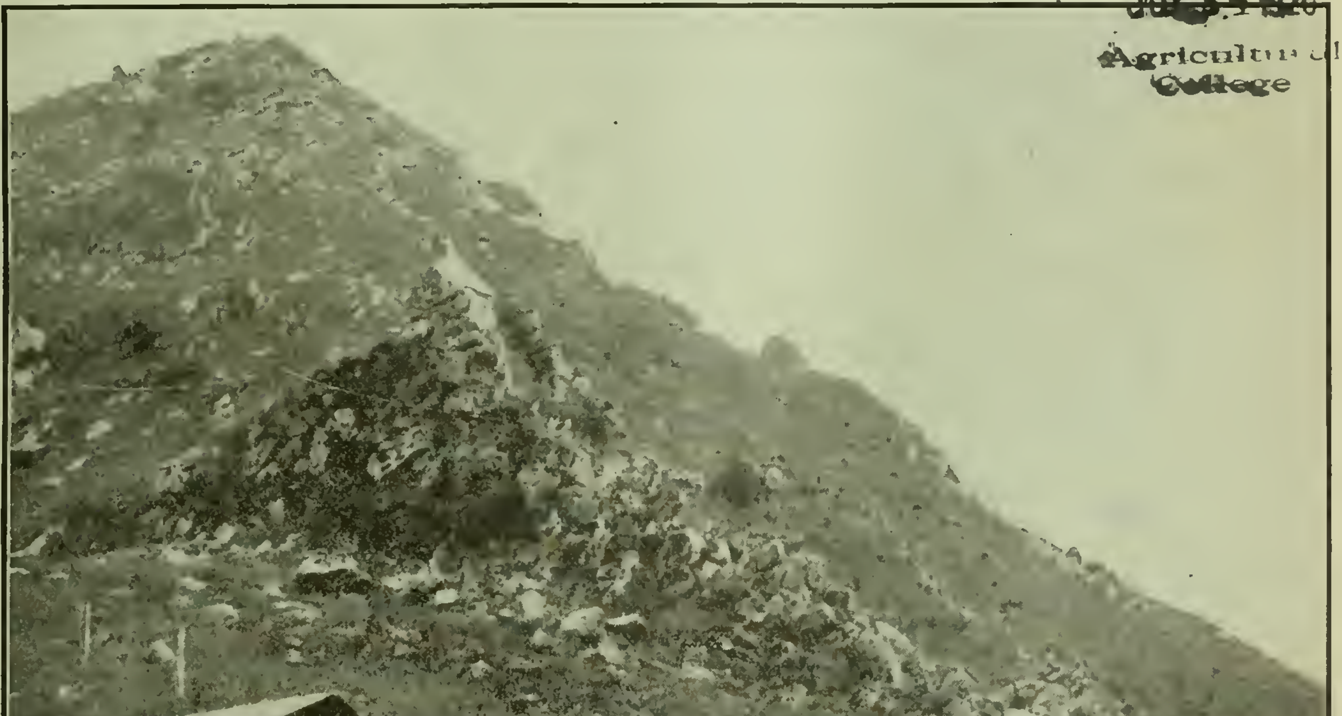

MODERN FRAME HOUSE APIARY, BORCHALINCK CO., TIFLIS

# Order Your Bee Supplies Now

NOW is the time to check up on your hives and accessories to make sure that everything is complete and in perfect condition for the coming season. Our complete line of Bee Supplies includes everything needed by the modern Beekeepers. Besides our own exclusive articles we are distributors for the famous Lewis Beeware line, and dealers in Root's Extractors and Smokers, and Dadant's Foundations. Orders placed now can be filled promptly. Prices on many articles are sure to advance within the next few months. Send for our large 1920 Catalog today.

## *Beeswax Rendered from Old Combs*

WE pay you the highest market price for rendered wax, less 5 cents per pound rendering charge. Our special hydraulic steam wax press gets the very last drop of wax from old combs and cappings assuring you maximum profit on them. Write for full particulars.

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SEND us samples of your honey and we will quote you a price equal or better than that of any other concern. We buy and sell both comb and extracted honey. Cash remitted in full the same day shipment is received.

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THIS new catalog contains over 40 pages of every variety of Beekeeper's Supplies, including all the latest and most improved devices. It is really a valuable reference book on beekeeping accessories.

- Tin Rabbets
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**THE FRED W. MUTH CO.**

*"THE BUSY BEE MEN"*

**CINCINNATI, O**

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A very complete text on beekeeping. 575 pages, attractive cloth binding, $1.50. French edition, $1.75; Spanish, $2.

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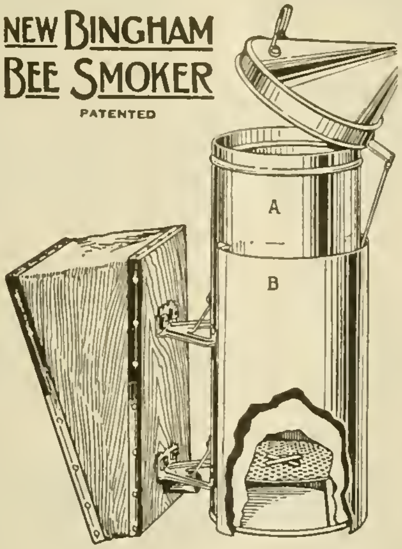
# NEW BINGHAM BEE SMOKER

PATENTED



The Bingham Bee Smoker has been on the market over forty years and is the standard in this and many foreign country. It is the all-important tool of the most extensive honey producers in the world. It is now made in five sizes.

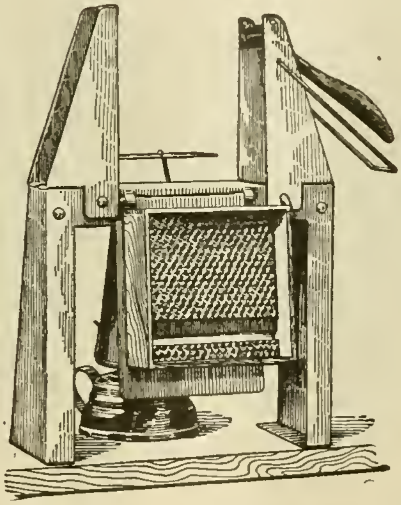
| Postage Extra | Size of Stove in. | Ship. Wt. Lbs. | Price |
|---|---|---|---|
| Big Smoke, with shield | 4 x10 | 3 | $2.50 |
| Big Smoke, no shield | 4 x10 | 3 | 2.00 |
| Smoke Engine | 4 x 7 | 2¼ | 1.50 |
| Doctor | 3½x 7 | 2 | 1.15 |
| Conqueror | 3 x 7 | 1¾ | 1.00 |
| Little Wonder | 3 x 5½ | 1½ | .80 |

Smoke Engine or Doctor in copper, $1 extra.

East Lansing, Mich.
A. G. Woodman Co.,
Grand Rapids, Mich.

I have now had several weeks' opportunity to try out the New Smoker called the Big Smoke, with the guard about the fire pot. The smoker is even more than I anticipated, and unless something else is brought out that is still better, you can be assured that this particular one will be the standard equipment for this place from now on.

B. F. KINDIG.
State Inspector of Apiaries.



Conneaut, Ohio.
A. G. Woodman Co.

Dear Sirs: The Big Smoke Smoker received and is satisfactory. It is just what I have been wanting for 10 years.

W. KLABUHN & SONS.

The Woodman Section Fixer, a combined section press and foundation fastener, of pressed steel construction, forms comb-honey sections and puts in top and bottom foundation starters, all at one handling. It is the finest equipment for this work on the market.

Bellvue, Colo., May 20, 1920.
A. G. Woodman.

Sir: I purchased of you, three or four years ago, a Woodman Section Fixer, which gave better satisfaction than anything that I have been able to find either before or since. Do you still have them on the market? If so, send price list.

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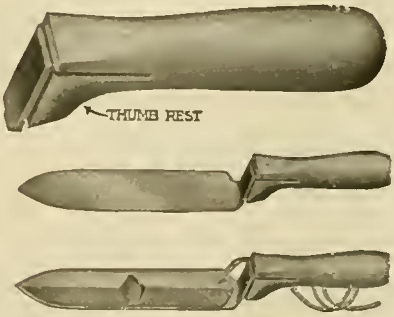
The genuine Bingham Honey Uncapping knife is manufactured by us here at Grand Rapids and is made of the finest quality steel. These thin-bladed knives, as furnished by Mr. Bingham, gave the best of satisfaction, as the old-timers will remember. Our Perfect Grip Cold Handle is one of the improvements.



### TIN HONEY PACKAGES

2½ lb., Friction Top cans, cases of 24
2½ lb., Friction Top cans, crates of 100
2½ lb., Friction Top cans, crates of 450
5 lb., Friction Top pails, crates of 12
5 lb., Friction Top pails, crates of 100
5 lb., Friction Top pails, crates of 200
10 lb., Friction Top pails, cases of 6
10 lb., Friction Top pails, crates of 100
60 lb., case, in cases of 1 and 2
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Ask for our special money-saving prices stating quantity wanted.

# A. G. WOODMAN CO.

**GRAND RAPIDS, MICH., U. S. A.**

**QUEENS** BEES BY THE POUND **QUEENS**

The rush of our bee shipping season will practically be over by July 1st; will then be in position to take care of your QUEEN orders. Just received a picture from a party showing a colony built up from about 2 pounds of bees and a queen last spring (1919) and at that time weighed 330 pounds gross; others in the yard did better than that one. We have had colonies here gather 400 pounds spring crop. Party wrote from Chicago: "The shipment of bees was received on May 7, this year; hived same day; did not examine until 18th, when we found all queens accepted and had laid in three frames. We greatly appreciate receiving such good grade of bees and hope to favor you with larger orders in the future." Another from Nebraska: "Wish to tell you how well pleased I am with the business done with you. Some of the 50 packages had less than 100 dead bees in them. Those queens of yours are the best uniform QUEENS I have ever received, What is your price on 200 two-pound packages with queens for spring, 1921?"

Our QUEENS are hardy. gentle Italians; they throw bees that fill the supers. GUARANTEE safe arrival and satisfaction on QUEENS. With my method of feeding, can ship bees successfully in July and August. Get a few packages and build them for the fall flow or winter. Send for FREE Circular giving reference, prices by parcel post, nuclei, guarantee, etc.

| | 1 | 6 | 12 | 50 | 100 |
|---|---|---|---|---|---|
| Untested Queens | $1.50 | $7.50 | $13.50 | $48.00 | $95.00 |
| Select Untested Queens | 1.65 | 8.25 | 14.85 | 52.80 | 104.50 |

| | 1 | 6 | 12 | 50 |
|---|---|---|---|---|
| Tested Queens | 2.50 | 13.50 | 27.00 | 110.00 |
| Select Tested Queens | 3.00 | 16.20 | | |

1 pound package bees, $2.40; 25 or more, $2.16 each
2 pound package bees, $4.25; 25 or more, $3.83 each
3 pound package bees, $6.25; 25 or more, $5.62 each

Add price of queen wanted when ordering bees.

**NUECES COUNTY APIARIES, E. B. AULT. Prop. CALALLEN, TEXAS**

HONEY CANS

Several cars just unloaded at our Ogden, Utah, and Idaho Falls, Idaho, warehouses—more coming. We have anticipated the heavy demand and can fill your orders promptly. Avoid congested supers and loss of honey by ordering early.

**SUPERIOR FOUNDATION**

We are keeping pace with the enormous demand. For real quality specify "SUPERIOR" Foundation. If your dealer cannot supply you, write us for special prices.

**BEESWAX**

We are still paying top prices.

"Everything in Bee Supplies."

**SUPERIOR HONEY CO., Ogden, Utah**
(Manufacturers of Weed Process Foundation)

"GRIGGS SAVES YOU FREIGHT"
TOLEDO

**NOW FOR THE 1920 HONEY CROP** We will buy it, both comb and extracted

We want especially White Orange, White Sage, White Clover, Basswood, Raspberry.
Write us what you have, sending samples, and prices asked, in first letter.

SECOND-HAND 60-Lb. CANS

These cans used only once, packed in good cases. 10 cases, 70c; 50 to 100 cases, 65c; 100 to 500, 60c.

BEESWAX WANTED

**GRIGGS BROTHERS CO., TOLEDO, OHIO** DEPT-24

' GRIGGS SAVES YOU FREIGHT"

THREE-BAND ITALIANS

Satisfaction Guaranteed

Untested $1.00 each, $10.00 doz., $70.00 per 100
Tested $2.25 each, $24.00 doz.
Breeders $5.00 each.

No more nuclei for sale this season.

**IRISH BROS., DOCTORTOWN, GA.**

**HAND-MOORE QUEENS**

How many of you, let me see, have tested out the Hand-Moore bee? Our bees get honey by the ton, and honeys what brings the mon.' So if you want your honest share, and are not content with just the tare. Buy Hand-Moore queens, that's what I say, and do it, yes, and right away.

Untested $1 50 each; 6, $8.00; 12, $15.00.

**W. A. LATSHAW CO.**
CLARION, MICH.

# DADANT'S FOUNDATION WAS FIRST MADE BY HAND

Many are unacquainted with the method of making bee comb-foundation by hand. To these the following sketch of how **Dadant's Foundation** was first made may be interesting.

It was first necessary to get thin, plain sheets of beeswax. This was done by the dipping process. Smooth, plain boards, after being wet, were dipped into the hot beeswax, then hung up to cool for a moment, then the edges were trimmed, next the flat sheets were peeled off of both sides and piled up and set away to cool.

"DIPPING"—THE FIRST PROCESS IN THE MAKING OF FOUNDATION

These piles were now cut up into sheets just as wide as the foundation was to be, and after being tempered in water were run through the milling machine, or moulder, which gave the impression of the comb. Soap was and is still used on these mills to keep the foundation from sticking.

Another trimming with a sharp soaped knife and the piles of **Dadant's Foundation** were ready for careful papering and boxing for the customer.

**DADANT'S FOUNDATION** EVERY INCH, EVERY POUND, EVERY TON EQUAL TO ANY SAMPLE WE HAVE EVER SENT OUT.

*Specify it to your dealer. If he hasn't it write us*

**DADANT & SONS, HAMILTON, ILLINOIS**

*Catalog and Prices on Bee Supplies, Beeswax, Working into Comb Foundation and Comb Rendering for the asking*

# A QUESTION AND AN ANSWER

When they had unpacked their first carload of **Lewis "Beeware"** a concern who had never had our goods before was written to as follows:

## OUR QUESTION

*Watertown, Wisconsin,*
*May 1, 1920*

*Kanawha Seed Company,*
*617 Virginia Street,*
*Charleston, W. Va.*

*Gentlemen:*

*When it becomes a part of our duty to go out and guarantee on our personal word the quality of Lewis "Beeware," we feel it is also our duty to make sure that the customer is satisfied. Do you feel that the carload of Lewis "Beeware" which you have received comes up to the standard of quality which you were assured it would reach?*

*Yours very truly,*
*G. B. LEWIS COMPANY*

## THEIR ANSWER

*Charleston, W. Va.*
*May 5, 1920*

*G. B. Lewis Company,*
*Watertown, Wisconsin*

*Gentlemen:*

*Answering your favor of the first inst., beg to state that the quality of Lewis "Beeware" is fully up to our expectations, and furthermore we believe that the workmanship thereof is a little better than usually found in any other make of beekeepers' supplies ever handled by us.*

*Yours very truly,*
*KANAWHA SEED CO.*

Beekeepers, this is the experience of thousands. Our interest continues after you get our goods. Use our Service Department for beekeeping queries.

**LOOK FOR**

BEE HIVES AND APIARIAN EQUIPMENT
BEWARE
WHERE YOU BUY YOUR
BEEWARE
WATERTOWN WIS. U.S.A.
MAKES THE FINEST.
COPYRIGHT, 1916, BY G. B. LEWIS COMPANY

**THIS MARK**

# G. B. LEWIS COMPANY, WATERTOWN, WISCONSIN

**MAKERS OF FAMOUS LEWIS "BEEWARE"**

**BRANCHES AND DISTRIBUTORS EVERYWHERE**

AMERICAN BEE JOURNAL

VOL. LX—NO. 7 HAMILTON, ILL., JULY, 1920 MONTHLY, $1.00 A YEAR

# Some Observations on European Foulbrood

By G F. White, Bureau of Entomology, U. S. Dept. Agr., Washington, D. C.

EUROPEAN foulbrood is an infectious disease of honeybees that is characterized by the death of the brood during its uncapped stage, and by the absence of both ropiness and disagreeable odor. Studies on the disease were made by the writer from 1902 to 1916 and some of the observations are given in the present article. Those who may be interested in the results obtained can find a more detailed summary of them in Bulletin 810.* No work directly on the treatment of the disease was attempted, but in choosing problems for study those were selected which by their solution would furnish information that could be applied readily by the beekeeper in any revision of methods of treatment now in use, which might be needed, or in devising new ones.

### Causes of European Foulbrood

European foulbrood can be produced experimentally (Fig. 1.) by feeding a colony syrup which contains the crushed bodies of larvæ sick or dead of the disease. The larvæ become infected during the feeding stage, infection taking place at some time during the period from about 2 days of age to capping. Larvæ live more than 2 days after becoming infected. If they die, therefore, they are 4 days old or older at the time of death. Since larvæ are capped about 4 days before pupation, it is to be expected that death would occur before the pupal stage is reached, and this is what happens. Worker, drone and queen larvæ are susceptible to infection; adult bees are not. This is true of all races of bees kept by American beekeepers.

Since European foulbrood occurs at least in Austria, Denmark, England, Germany, Switzerland, Canada and the United States, the disease cannot be attributed entirely to climatic conditions nor to the kind of food obtained by the bees. The course of the disease is affected somewhat, however, by the quantity of food obtained and by the season of the year.

The exciting cause of European foulbrood is a germ † (Fig. 2) that is taken into the stomach of the larva with its food. The name of it is **Bacillus pluton.** It is very small, about 25,000 of them placed end to end measure an inch. Some are spherical, others are egg-shaped, while most of them in larvæ that are dead of the disease, or nearly so, are more or less oval, and with somewhat pointed ends. The germ does not bear spores. Being the cause of European foulbrood, it is always present in brood sick or dead of the disease.

Other germs are almost invariably found in brood dead of European foulbrood, but none of these additional ones cause disease. One of them is **Bacillus alvei** (Fig. 3). This is an elongated slender rod; about 10,000 are required to measure an inch. It produces spores. By comparing **Bacillus pluton** (Fig. 2) and **Bacillus alvei** (Fig. 3) one can readily see that they are very different germs.

Another germ which does not produce disease, but which is occasionally present in brood dead of European foulbrood is **Streptococcus apis** (Fig. 4). This one is more or less spherical and resembles **Bacillus pluton** (Fig. 2) both in size and form. The two, however, are very different, more so, probably, than is the apple tree different from the oak.

### Names of the Diseases

The names that are at present being used for the brood diseases in the different countries are rather intimately connected with studies made on the germs contained in the brood dead of the different diseases. In 1885, **Bacillus alvei** was found in brood dead of foulbrood by Cheshire and Cheyne of England, and for about a

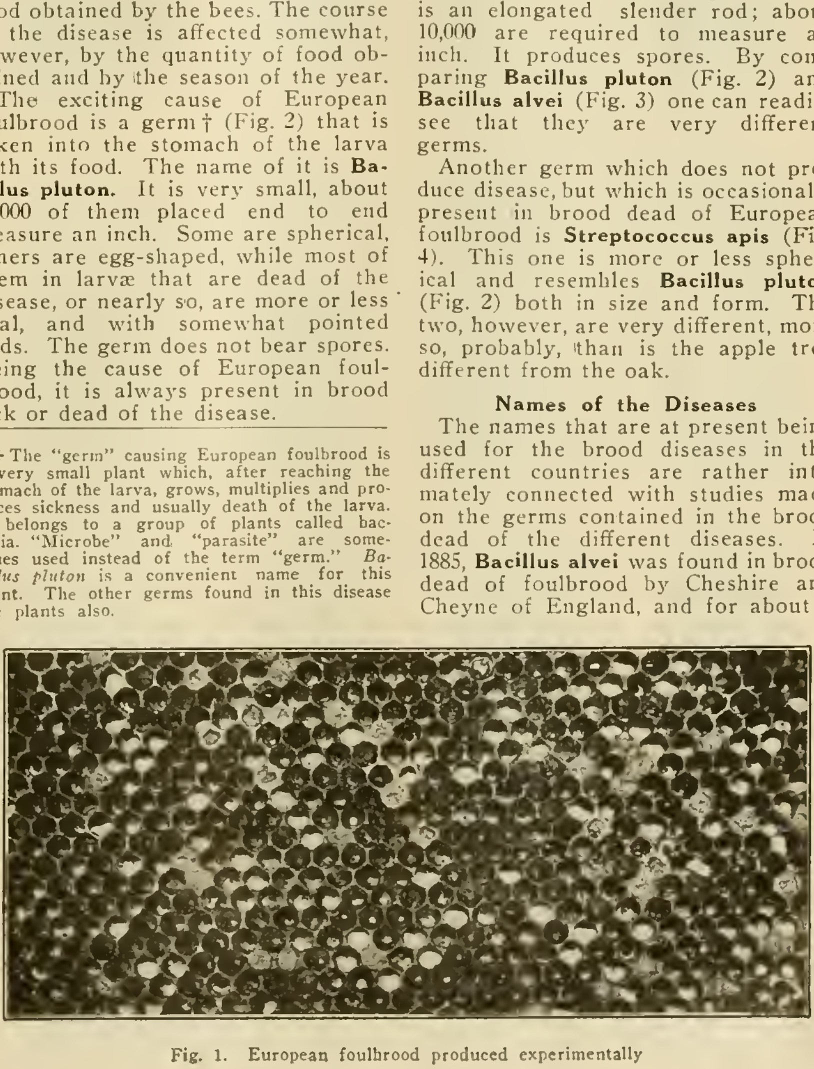

Fig. 1. European foulbrood produced experimentally

decade and a half this germ was quite generally supposed to be the cause of the disease. On account of the work by these Europeans, the name European foulbrood has been used as one of the names for the disease. In America, the name "black brood" was used for a while for this disease, but it was soon found, from a study of the condition, to be the same disease that had been studied by the English workers and considered by them to be "foulbrood." There was no further need, therefore, for the name "blackbrood," and it was dropped.

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* Bulletin 810. European Foulbrood. U. S. Department of Agriculture, Feb. 26, 1920. The Bulletin was prepared primarily for the beekeeper, but others also in studying the bee diseases, may find it useful. Those who may be interested, particularly in the more practical portions of the paper, can well omit the parts of it which are technical.

† The "germ" causing European foulbrood is a very small plant which, after reaching the stomach of the larva, grows, multiplies and produces sickness and usually death of the larva. It belongs to a group of plants called bacteria. "Microbe" and "parasite" are sometimes used instead of the term "germ." *Bacillus pluton* is a convenient name for this plant. The other germs found in this disease are plants also.

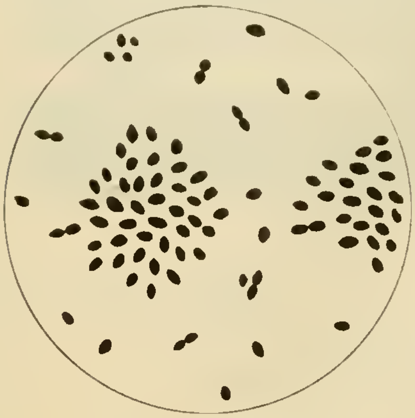

Fig. 2. *Bacillus pluton*

The name "stinking foulbrood" has been used in some countries for the disorder in which **Bacillus alvei** occurs in large numbers, and "sour brood" for the one in which **Streptococcus apis** is present in considerable numbers. The writer wishes to suggest that these are two names for one disease and that the disease is the same as the one for which the name European foulbrood is being used in this country.*

The term "foulbrood" has been used and is still being employed somewhat in a general sense meaning simply a brood disease. For at least 40 years beekeepers have recognized two kinds of foulbrood—one in which most of the larvæ die in uncapped cells and the other in which most of them die in capped ones. It is now positively known that these, instead of being two forms of one disease, are, in fact, two very different diseases. In this country they are being called European foulbrood and American foulbrood.

As both have the word "foulbrood" in them, one could easily be misled and interpret them wrongly to mean that they refer to two forms of one disease; as both diseases are found in Europe as well as in America, the names do not refer to their geographical distribution; and as it is not known in what country the diseases were first encountered, the names do not refer to the place from which the diseases spread. Since, therefore, these names are somewhat misleading and somewhat long, it must be admitted that they are more or less open to criticism. They need not cause confusion, however, if the above facts in regard to the diseases are borne well in mind.

### Symptoms of European Foulbrood

The dead brood is mostly in uncapped cells; no dead pupæ are found, and the dead bees appear to be like those of healthy colonies. Since much of the affected brood is removed by the bees, capped cells are scattered among uncapped ones, giving to the brood-nest the pepper-box appearance (Fig. 1). The caps on cells which contain dead larvæ may (fig. 5, P) or may not be punctured; the brood-combs are practically without odor; and the colony may be weak if much disease is present.

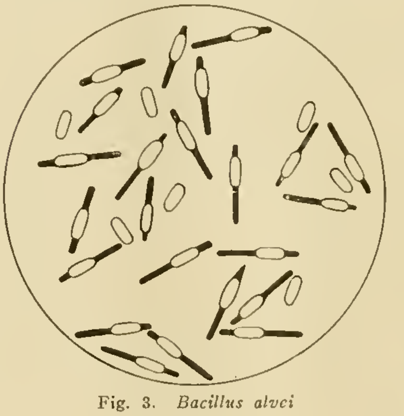

Fig. 3. *Bacillus alvei*

The larvæ, before death, (Fig. 5, A, E) lose somewhat the pearly whiteness and turgidity of living healthy ones (Fig. 5, D. F. I) and soon afterwards assume a yellowish tint. Later they take on a brownish tone, and still later this deepens often to a dark shade. The dead larval remains not infrequently occupy unnatural positions within the cell. Those dying while young usually lie on the bottom of the cell (Fig. 5, A, B, C, E) while those that are somewhat older occupy irregular positions on the floor (Fig. 5, G, H, J, L, M).* The remains of larvæ dying during the first two days after capping occupy irregular positions on the floor of the cell (Fig. 5, N, O), but those of larvæ dying later occupy a uniform endwise position (Fig. 5, R, S, T). There is a tendency on the part of adult bees to remove the diseased larvæ. This is usually done piecemeal and in the infected colony, therefore partially removed ones are frequently found (Fig. 5, B, Q).

The decaying larval remains are not ropy, as a rule, only a small number of them possessing a viscidity that will permit the mass to be drawn out to the extent of an inch or so. This ropiness is more marked in the case of the older larvæ. When the dead larvæ are not removed they dry and become the scales (Fig. 5, C, R, T). As a rule these scales are rather easily removed. Those resulting from viscid remains adhere more closely to the cell wall than the others.

### Experimental Studies on European Foulbrood

Much concerning the cause of European foulbrood, its spread, its diagnosis and the chances for recovery of the colony, has been learned from experimental studies on the disease. At the time the writer began his investigations of the bee diseases very little experimental work had been done on them and it was necessary, therefore, to devise methods for doing it. Those finally worked out were found to be very satisfactory. A brief description of them is given here, since by being acquainted with them the beekeepers will be aided in interpreting the results obtained.

A nucleus containing from 3 to 6 frames of bees, with brood in the uncapped stage and a queen doing well, was found to be a good colony for experimental purposes. The brood-frames are moved to one side of the hive-body and on the bottom-board on the other side are placed shallow glass dishes as feeders. The entrance of the hive is closed except for a space of about 1 inch on the side occupied by the frames. Any race of bees may be used, but naturally a gentle one is preferred. The queen should be clipped. The site for the experimental apiary should be broken up by small trees. The entrances of the hives in adjoining rows are pointed in opposite directions. Hives placed in pairs alternate with a single one. When in pairs the space left for the bees is on the side of the entrance furthest from the other hive. The inoculation feedings may be made at any time of the day, if there is a good or fair flow of nectar, but during a dearth it is advisable at times to inoculate in the evening just before darkness. By these various means, it will be ob-

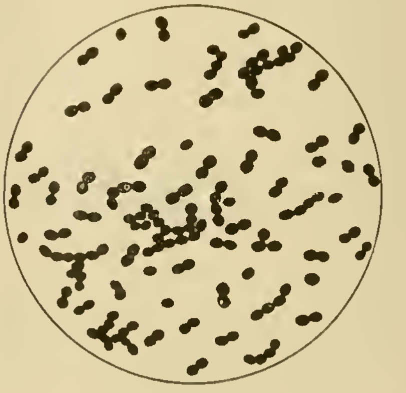

Fig. 4 *Streptococcus apis*

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* The name "stinking foulbrood" for European foulbrood must seem to the beekeeper of America to be somewhat misleading, since it is American foulbrood that is the foul smelling disease. The origin of the name is briefly this: From the work in England, *Bacillus alvei* was thought to be the cause of a brood disease having a foul odor. When, therefore, *Bacillus alvei* was encountered in a brood disease by investigators on the continent of Europe the disease was naturally supposed by them to be one with a foul odor and was referred to by the name "stinking foulbrood." This name was used for the disease, to distinguish it from another one which did not contain *Bacillus alvei*, and the samples of which were without any marked odor. For this disease the name "non-stinking foulbrood" was used. This latter one was American foulbrood. (It is not unusual for samples of American foulbrood to lose the foulbrood odor quite soon after being taken from the hive). It must be remembered, therefore, in using the term "stinking foulbrood" that it does not refer to the disease which has the foulbrood odor, but to European foulbrood.

*These abnormal positions of larvæ as seen in samples of diseased brood are due, to a considerable extent, to the shaking used in removing the adult bees from the frames and to rough handling afterward.

served, the likelihood of robbing, swarming, absconding and accidental straying or drifting of bees is reduced.

In making the inoculations two methods were used. Those have been referred to as the direct and the indirect methods, respectively. Following the direct method, a group of about 10 to 20 larvæ, 2 to 3 days old, are fed thin sugar syrup to which has been added the contents of stomachs of sick larvæ. This is done by putting a very small quantity of the contaminated syrup directly with the food of the larva within the cell. For this purpose a small glass tube is used Care must be taken that too much syrup is not added in making the inoculations, as the larvæ would be floated thereby. Care must be observed also that they are not disturbed mechanically by the tube. Disturbances of this kind are very likely to be followed by their removal by the adult bees. Within 3 days the inoculated larvæ show marked symptoms of the disease. some of the sick or dead ones are removed by the end of the third day and most of them before the end of the fourth day. Only a few are found infected outside the arena of brood inoculated. The colony usually speedily recovers from the infection and no further evidence of the disease is seen.

By the indirect method the entire colony is inoculated through feeding it about one-third of a pint of sugar syrup to which the crushed bodies of from 5 to 10 larvæ sick or dead of the disease have been added. The first symptoms of the disease are observed about 3 days after inoculation. The youngest larvæ to show symptoms are about 4 days old. After a single feeding the colony usually soon recovers from the disease. Other factors being equal, the recovery is more rapid when the amount of brood is small in proportion to the strength of the colony, when the flow of nectar is good, and when the bees are active.

A stock of fresh disease material is needed during most of the experimental studies, and this can be secured from colonies inoculated for this purpose. In inoculating these stock colonies the disease material for the first feeding is taken from samples received from the beekeepers. Repeated inoculations are needed, as a rule, to keep the colony diseased, as there is a marked tendency for the colony to recover from the infection. The material for these subsequent inoculations is taken from the stock colonies themselves. For the first inoculation the direct method is used, and for the subsequent ones the indirect method is employed.

It is only after repeated inoculations have been made and the disease has been in the colony for some time that the rubberlike scales (Fig. 5, R, T) are found that resemble in many ways those of American foulbrood. As these scales are somewhat difficult for the bee to remove, the number present naturally increases to a certain extent during the course of the disease. The number encountered in any given area of brood-comb, however, is always small. The bees allow some of them to remain in the brood-comb for a considerable period.

Some of the experimental colonies that were rather heavily infected, but which remained sufficiently strong to winter well, were found to be diseased in the spring, but some were not. Those that were only lightly infected, as a rule, did not show the disease the next year. Whether the germs used had previously been in a diseased colony has given the writer no uneasiness. All hives which had housed a European foulbrood colony were flamed inside before they were used again.

(To be Continued)

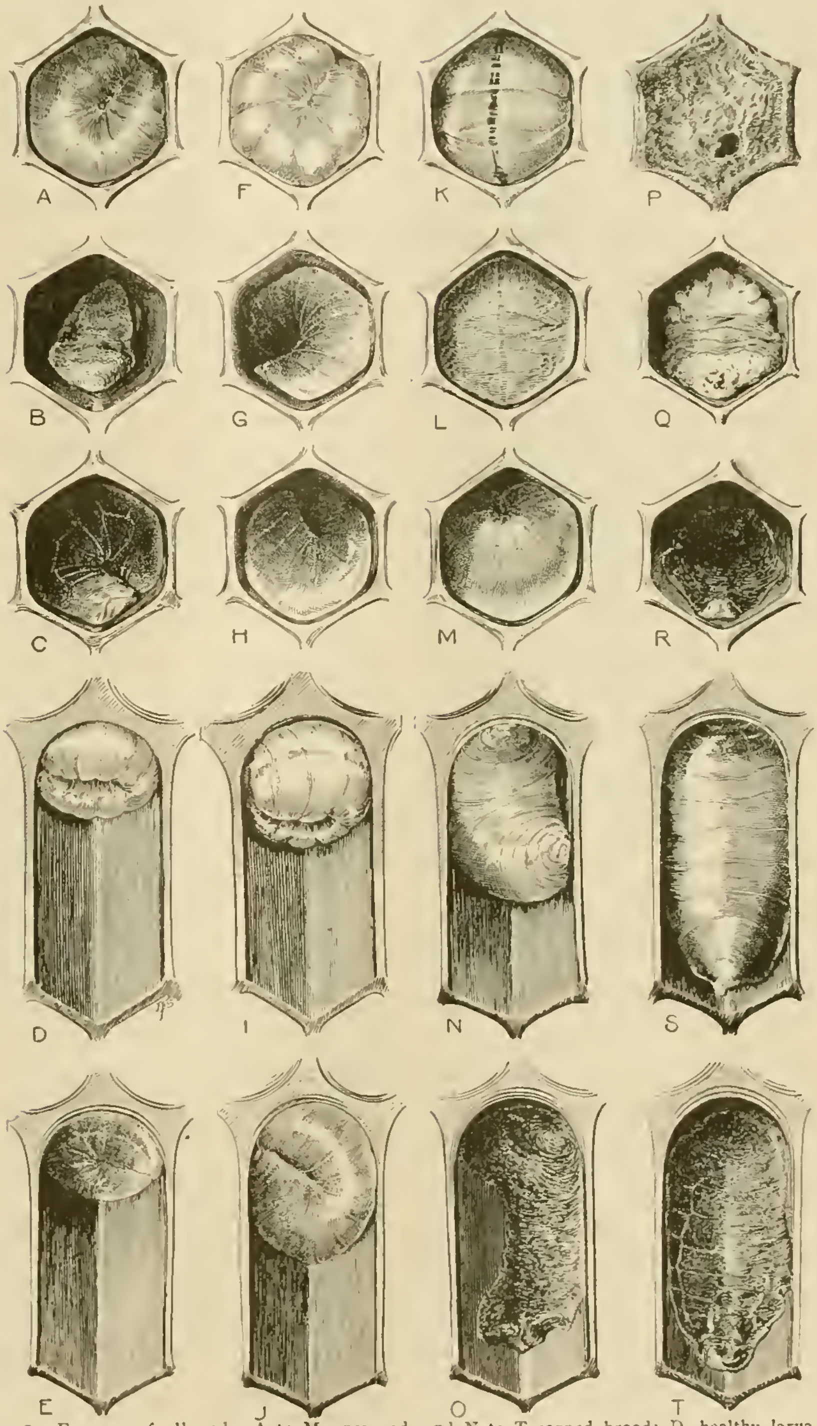

Fig. 5. European foulbrood. A to M uncapped, and N to T capped brood; D. healthy larva at the earliest age at which symptoms of the disease appears; A E, young larvæ showing symptoms of European foulbrood; B O, larvæ partially removed by the adult bees; C, scales from young larva; F I, healthy larvæ somewhat older than D. G H J, dead larvæ of the same age as F and I; K, healthy larvæ slightly older than F, with dorsal side turned toward the observer; L M, dead larvæ about the same age as K; N, larva dead at the time of spinning; O, scale of a larva similar to N; P, a punctured cap; Q R S T, larvæ which had assumed the endwise position in the cell before death; Q, larva partially removed; S. larva dead of the disease; R T, end and ventral view, respectively, of European foulbrood scales of larvæ of the age shown in S. These scales and those of American foulbrood are quite alike. The caps from N O Q R S and T were removed by the adult bees.

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# THE EDITOR'S VIEWPOINT

### Classification of Honey For Freight Shipment

Beekeepers will be charged higher rates for shipments of honey by freight in many localities, according to the new Supplement to Freight Classification No. 1, which becomes entirely effective July 15, 1920. Arguments presented at hearings on these proposed rate increases were only partially successful. The beekeepers were represented by the G. B. Lewis Company, Dadant & Sons, and the A. I. Root Company. The authorities made it plain that the increases were necessary because of improperly packed shipments of honey by careless beekeepers, with consequently increased presentation of freight damage claims.

Southern district comb honey rate on carlots is given fourth class. No previous rate was given this item, which may indicate greater freight movements of comb honey in the south.

Extracted honey rates were also largely increased as follows:

1—In metal cans, completely jacketed, L. C. L. western, first class; previously fourth.

2—Similar honey, except in boxes, L. C. L. western, third class; previously fourth.

3—Bulk in tight hardwood barrels with eight metal hoops, L. C. L. southern and western, now third class; previously fourth.

4—Same in metal cans, completely jacketed, carlots, southern, fourth class; first classification ever given.

Reductions were secured only on honey in glass or earthenware packed in barrels and boxes; carlots, southern, first to third class, and on granulated honey, carlots, in boxes over metal, southern, now fourth, previously third.

### Good Samaritan Fund

We are still getting subscriptions to the Franco-Belgian relief fund. The following remittances have been received since the last statement:

L. W. Derrin, Cushman, Ore., $2.50.
Montgomery Co., Pa., Beekeepers, $5.00.

Twenty of the queens were ordered to France and Belgium. But transportation is so irregular yet, that both Dr. Phillips and Dr. Miller advise against sending queens now. They write in a similar strain from Europe. So the balance of the queens subscribed will probably be sold in this country and the proceeds sent over in cash. There is still a big margin of exchange. All the news indicates that the people living in the devastated regions are still sheltered in iron-covered shacks or cabins of the most temporary description.

### The Bee World

After what appeared to us as discouraging delays, the Bee World, of the Apis Club, of Benson, Oxon, England, finally reached us, 3 numbers—March, April and May—in one. But this number is worth while, 68 pages, replete with information.

We have never seen a bee magazine with so much "meat in the cocoanut." We are not in the habit of doing any advertising for anybody, not even for ourselves, in the reading columns. But we believe this magazine should be sustained. To secure it, you must be a member of the "Apis Club," and this will cost you 7s 6d. Some years ago it would have cost you $1.87, but at the present date English values are low and you can probably get a draft for the above amount for about $1.50.

The last number gives a splendid review of beekeeping periodicals in all countries. Why not make it a quarterly review?

### Georgia State Beekeepers

Our esteemed friend, J. J. Wilder, editor of the "Dixie Beekeeper," is announcing a Georgia State Beekeepers' Association. We wish we had heard of it sooner, so as to help advertise it. We hope there will be a good attendance. No better man than J. J. Wilder can organize a thing of this kind.

### Obituary—Paul Scheuring

Mr. Paul Scheuring, of De Pere, Wisconsin, who died lately at the age of 74, was one of the extensive beekeepers of that State. He came from Europe with his parents in 1849, at the age of 3, and lived in De Pere the entire 71 years. He had as many as 6 apiaries. Of late years he had reduced his interest to a single apiary. He wintered 135 colonies in the cellar the past winter. But because of his bad health, he was unable to attend to them properly, and came out of winter with only 45. Mr. Scheuring was an 8-frame hive man and harvested some excellent crops. He filled several public offices and, at his death, the flags of the city building were put at half-mast. We are told one of his sons will continue his beekeeping.

### Tunis Beekeeping

Slowly, but steadily, the bee magazines that were compelled to suspend circulation by the World War, are coming back to life. We are in receipt of the revived "Bulletin de La Societe d' Apiculture de Tunisie," its 56th number, published in Tunis.

Tunis, a French colony, in northern Africa, is quite a bee country. A large bulletin, entitled "La Tunisie Apicole," was published in 1912 and mentioned in the American Bee Journal in October of that year, with photos of a Tunis school of beekeeping. The writer and teacher, J. Georges, is still the manager of their editorial activity. Success to them.

### U. S. Publications on Bees

To be had from the Division of Publications, Department of Agriculture, Washington, D. C., as long as the supply lasts.

Control of American Foulbrood. E. F. Phillips. Free.

American Foulbrood. G. F. White. 15 cents. Technical paper.

A study of the behavior of bees in colonies affected by European foulbrood. Arnold P. Sturtevant. 5 cents. Technical paper.

### Michigan Meetings

The beekeepers of Michigan are to have their summer meeting at Boyne City, July 28 and 29, and I have promised to do my best to be there. And now comes the Huron County Association with a meeting, July 16, of the 3 counties of Huron, Sanilac and Tuscola, at the home apiary of David Running, one of the most expert beekeepers in Michigan. It is a great temptation, and I am going to try to make the two meetings, though they are 12 days apart. I will surely find something to do between dates.—C. P. D.

### Chenango County, New York

The beekeepers of Chenango County are announcing a summer meeting and basket picnic at the apiary of George S. Hard, Norwich, N. Y., July 22. Their program is fine, but we received it too late to give it here. They are to have Dr. Geo. H. Rhea, of Cornell, and are to give several demonstrations and essays, with question box, discussions, and two lunches. That is the way to go at it. Many more such meetings should be organized, and the Journal will be glad to give them a notice.

### Metal Combs

"Why don't you say something in the Journal about metal combs, which are so extensively advertised? Are they good, or bad?"—A Reader.

It is not our custom to say anything in the reading columns about patented articles which are advertised. But in this case, there seems to be a universal interest, that requires a statement.

However, it will take more time to test these combs in a satisfactory manner. But we can point out the probable advantages and defects.

A metal base in comb was invented long ago. A beekeeper of Toledo, Ohio, whose name is not now available, sent to us, some 40 years ago, two sheets of foundation made of tinfoil dipped in wax and laminated to give them the print of the cells. Those two sheets were put by us into a hive and forgotten. We have never seen them since. Evidently the bees built comb upon them so that it would have been necessary to mark them to recognize them further. So we know that bees will work on metal if it is slightly coated with beeswax. But we have never thought of any advantage in this kind of foundation, for it would cost more than the other and, with a little care, we can secure perfect combs with all wax.

As to the full metal comb, we can see a big advantage in its being able to withstand the extreme heat and the weight of the bees, if the swarm accepts it. We can also see a large saving of beeswax and the avoiding of any drone comb, where it is supplied.

Other advantages are the possibility of boiling diseases of the brood, as well as moths, out of it. Whether the boiling out of the bees' cocoons, in very old combs, is possible too, is an open question which only long practice will solve. Moths will probably not work on them much, as only the small larvæ of this pest could worm their way through the interstices that exist from one cell to another in the metal comb. But they would riddle them enough to make the boiling out advisable.

The disadvantages are, first of all, the high cost. If you render the wax of the combs of a colony and send that wax to a foundation factory, you can have the entire set of foundation for that colony for about the price of one metal comb added to the value of that wax.

Possible disadvantages lie in the great conductibility of the metal for heat and cold. In a country where the temperature is constantly warm, as California or Texas, this objection has but little weight. But we are told by a beekeeper of Montana, and also by one of California, that brood has been chilled to death in these metal combs, in cool nights. This requires further and protracted tests.

The last disadvantage lies in the possibility of damage to the metal comb. A wax comb, if damaged by accident, in extracting, transporting, mice gnawing, or otherwise, will be readily repaired by the bees. But a metal comb, once damaged, is wasted. Neither is it necessary that the entire comb be damaged to make it worthless. Who would want to keep, in a hive, one or more combs in which say ten per cent of the cells could not be used either for brood or honey? We have before our eyes one of these combs, damaged on one side, beyond repair, by mice that gnawed it to eat the honey it contained.

After two or three years of experience with these metal combs on a fairly good scale, beekeepers will be better able to pass judgment upon them. Try them yourself.

When we think the matter over, we wonder whether some material exists that might be moulded into cells, which would be of a non-conducting material and could be repaired easily when damaged to large or small extent. Reviewing the different ingredients of human ingenuity and of natural origin, we find one that answers the purpose well—beeswax.

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### An Australasian Beekeeper and Publisher

During the last week in May we had the pleasure of a visit from Mr. W. S. Pender, beekeeper, manufacturer, and editor of the "Australasian Beekeeper," from West Maitland, New South Wales, Australia. Mr. Pender, whose magazine is now in its twenty-first year, was visiting America for information and enjoyment. He left Australia on the 12th of March and did not expect to return until July. The only thing which he did not like about his trip was the length of the sea voyage. He was 24 days on the way, without a stop, his first stop being Panama. He landed in New York, visited some of the leading manufacturers and beekeepers of our country, called upon the bee experts at the Bureau of Entomology at Washington, and from Hamilton was going to Denver, then to California, by way of Colorado Springs, visiting Manitou, the Garden of the Gods, Pike's Peak, the Grand Canyon, etc. He spent several weeks in California, and at the time when this Journal appears will be on the sea again for his return home.

Mr. Pender is a well educated man and a lover of natural history. We were sorry that the country roads were in such bad condition that we could not take him to some of our outapiaries. We were quite interested in hearing him speak of their country, where winter occurs during our summer, the months of June and July being the coldest they have. However, at West Maitland there is very little cold weather, only heavy frosts for a month or two, and they grow many tropical fruits. The bee business there depends mainly upon the eucalypti, as has been shown by the interesting articles which have appeared, from time to time, in this magazine, from the pen of Tarlton Rayment.

In summer they suffer greatly from heat and drought, the thermometer ranging up to 116 for several weeks. So they have their troubles, as well as we have.

Perhaps it will astonish some of our readers as much as it did us, to learn that Australia, which appears to our people from here as an insignificant island somewhere in the Pacific, has an area equal to five-sixths of the United States, that its length, from north to south, extends 28 degrees, from the 11th to the 39th, south; while the United States extends only 24 degrees from north to south, from the 25th to the 49th, north. We might know all of this, for it is on the maps, but we are so accustomed to consider the country in which we live as the greatest in the world, that it requires a special occasion for us to realize that we are not nearly so big as we think we are.

Australia is an up-to-date country, in beekeeping as well as in agriculture. "The Australasian Beekeeper" is a live publication and always makes interesting reading. They do not keep bees in "skeps," as they are still doing here in some of our States, in Great Britain, France and the other countries of Continental Europe. They realize that if they are to keep down diseases, they must have movable frame hives. It is time all our people understood it.

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### Melilotus Alba

"L'Apicoltura Italiana," in its April number, contains an article on sweet clover, by our Italo-American beekeeper, D. Barone. He explains that the origin of this clover is in Asia, and that for that reason it is often called "Bokhara clover," Bokhara being in Turkestan. He mentions what E. R. Root and Frank C. Pellett have written about it and its great value in the United States.

The Italians call this clover "Melilotus albus." They are indeed more correct than we are in the use of Latin names. The termination "us" of melilotus is masculine, the termination "a" of alba is feminine. We should call the plant Melilotus albus, or better, as a neuter, "Melilotum album." Our scientific names are a farce.

# SECURING GOOD COMBS

BY FRANK C. PELLETT

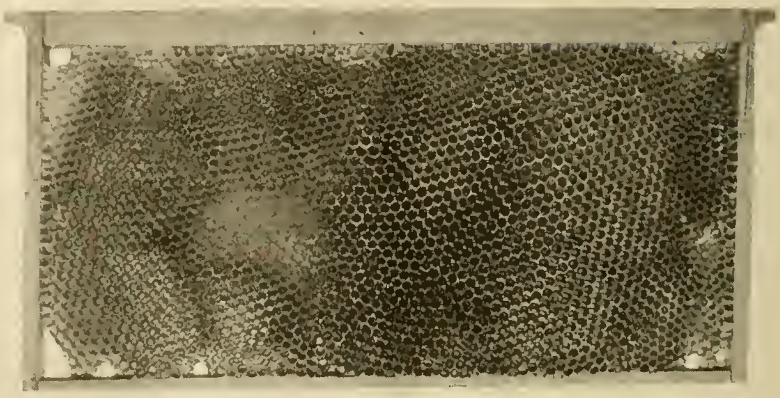

Fig. 2. This comb is built without foundation and is composed almost entirely of drone-cells

ONE of the most difficult things to impress upon the novice, is the importance of good combs. To save a few cents' worth of foundation it is the common practice to use a narrow starter. While this may secure a straight comb, it is likely to be composed largely of drone cells. Unfortunately, an article designed to explain the need of full sheets of foundation is not likely to reach those who need it most, for few of them read the bee magazines.

The writer has had occasion to examine hundreds of hives in the capacity of inspector and is fully convinced that if it were possible to place all the bees on the farms of America on full sheets of foundation, this alone would greatly increase the output of honey by eliminating a large proportion of the useless drones now reared. So much has been written on this point that it seems like useless repetition to state that bees left to themselves will build large quantities of drone comb and that instead of a large force of productive worker bees the colony will largely exert itself in rearing drones which are a tax on the colony.

In hiving swarms it is well if possible to use one or two drawn combs in the middle of the hive to give support to the cluster. Where full sheets are placed in all the frames, the weight of the swarm will often break them down. In the June issue of this Journal, F. W. Luebeck, of Indiana, tells how he hives swarms on foundation by placing an empty hive-body under the one containing the frames with foundation. The bees cluster under the frames at the start until the combs are partly drawn. Through an error Mr. Luebeck's name was omitted from his description of this method.

When a swarm has a young and vigorous queen, they will sometimes draw out combs composed almost entirely of worker cells. The explanation lies in the fact that the queen fills the cells with eggs as fast as they are built and it keeps the bees hustling to keep ahead of her. Since the queen is young, the bees feel no need of supersedure, and consequently have little use for drones. As soon as enough combs have been built to supply the needs of the queen for egg-laying, drone comb is likely to be built.

We have lately received from A. H. Pering, of Bloomington, Indiana, a set of combs which show very effectively what happens when the beekeeper fails to control conditions within the hive. The pictures herewith tell far more than the printed story.

Figure 1 is nicely fastened to the bottom bar, and aside from the large area of drone-comb it is a serviceable comb. Such a comb can be used in the extracting super if an excluder is used to keep the queen below. If the queen has access to it, sooner or later it will be filled with brood and a crop of drones will be reared in the large cells. Most practical beekeepers melt up such combs to avoid possible use by the queen. It is cheaper to permit the bees to build a new comb on a full sheet of foundation than to allow them to rear a crop of drones.

Figure 2 shows a comb composed almost entirely of drone-cells. Where the bees build from starters or without foundation, they are likely to build drone-comb, unless the queen is crowded for room in which to lay. In neglected apiaries a large portion of the combs often look like this. The larger cells require less wax and apparently are easier to build, hence the bees prefer to build drone comb rather than the smaller cells required for worker comb.

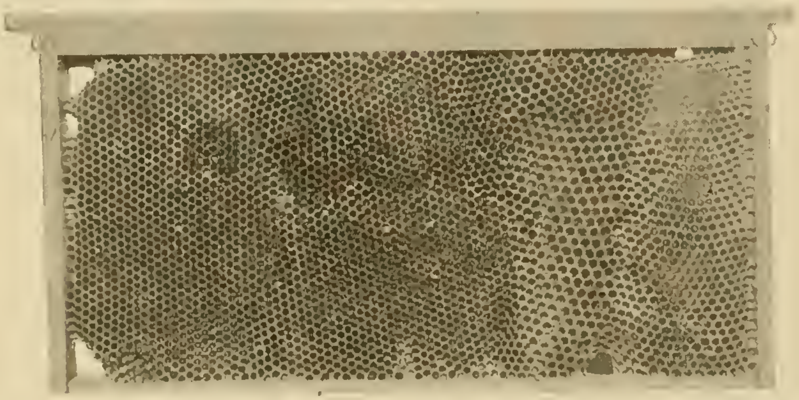

Fig. 1. An area of drone-cells spoils that which would otherwise be a good comb

Figure 3 shows a great waste of both wax and room. This comb is so badly gnarled that about one-fourth of its area is useless. Such uneven combs are common where no foundation is used.

Figure 4 shows the result of transferring naturally built combs without selecting those of worker cells. This appears very uneven and composed very largely of drone cells. Such a comb is almost worthless. It might be used temporarily in an extracting super, but when such combs are allowed to remain in the apiary, there is always danger that the queen will find access to them and fill them with brood.

Figure 5 shows a good comb which has been damaged by moths. The bees, in repairing the moth-eaten space, have filled it with drone comb. Even this amount of drone cells is sufficient to condemn this comb. It is expensive business to rear drones, and it is safer to build a new comb than to allow this to remain in the hive.

At figure 6 we see what happens when the honey is cut from the top of a comb and a portion returned to the bees. In this case the bees were robbed in the good old-fashioned way, even though they were in a modern hive and the combs built on foundation. Of course the honey was in the upper portion of the comb and, this removed, the bees proceeded to rebuild the missing portion with drone cells.

Good beekeeping lies in intelligent control of conditions by the beekeeper. Langstroth's invention of a frame surrounding each separate comb, enabled the beekeeper to reach any part of the hive at will. The invention of foundation insured, not only straight combs, but combs composed mostly of worker cells. Good combs are one of the first essentials to successful bekeeping.

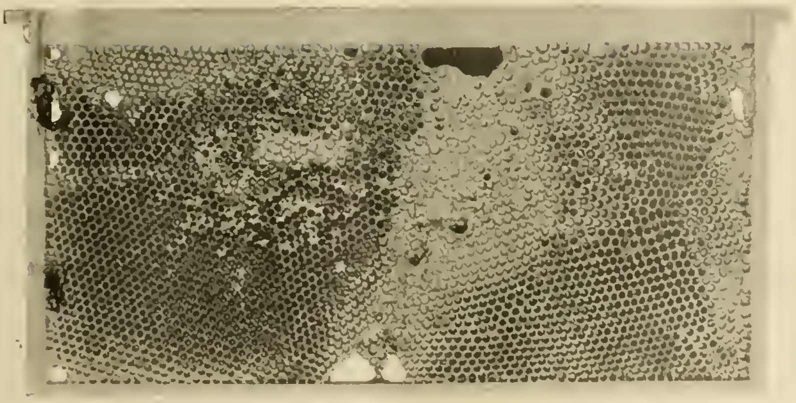

Fig. 3. Such gnarled space is a great waste of storage

## Troubles of the Publisher

Never has the publisher found it more difficult to meet the problems of the day than at present. Every month brings some rise in price in some commodity that enters into the making of a magazine. We have continued the same old price at which the American Bee Journal was published for many years past, thinking that the present conditions were temporary and that prices would decline. Rise after rise has continued until we now pay more than four times as much for the paper on which the Journal is printed as we did when we took over the Journal. Our engravings cost three times as much and everything else in proportion. We have tried every possible way to meet these extra costs without increasing our subscription price. Hundreds of other publications have suspended because of inability to meet the situation, while most of those still continuing have raised the subscription price.

Conditions now are such that $1 per year is not sufficient to pay the cost of publication of a journal like ours, and if the present high costs continue we will be compelled to increase our subscription price, as many publications have already done. We propose to wait a few months longer in the hope that prices of material will fall. In the meantime all our present subscribers will be given an opportunity to renew for as long a period as they wish at the present rate, $1 per year, 3 years for $2.50 or 5 years for $4. We are already receiving a large number of 3 and 5-year subscriptions from those who wish to take advantage of the present low price.

## Beginning With Bees

By H. C. Cook

I am of the opinion that the amateur is somewhat neglected. Generally the papers and lectures are a little too advanced for him, so I decided to let him get technical data and instructions from text books, and I would call his attention to a number of things he should and should not do.

Don't attempt to get into the bee business in a rush. Take time enough to learn the game, or your mistakes will be so numerous you will become discouraged. Most amateurs attempt to make increase too fast. They weaken their stock to such an extent that so many bees are lost during the winter that in the spring they are about where they commenced, which, to say the least, is a disappointment. Go slow and learn how and when to increase. As a rule it is bettter for a beginner to confine himself to producing honey. Sell the honey and buy bees for increase. This will give him an opportunity to study the bees, and then he can make increase at a time when it will cost him nothing, and rather, be a benefit to his honey crop.

Don't be led astray by the stories of men who imagine they are beekeepers. In later years you can look back, as I have done in several instances, and see that they know but little more than yourself, but were simply passing around information which generally turns out bad in the end.

Get some good text books, study them carefully, and apply them to your work. Don't try two or three men's ideas at the same time. Any one of them, perhaps, would bring you out to success, but mixing them may prove disastrous. For instance, Mr. Doolittle, in his method of working bees, tells us to have the hives full of honey in the spring, and the bees will take care of themselves, while on the other hand Mr. Alexander, equally as good an apiarist in every way, tells us that the key to success in honey production is spring, or stimulating feeding. He says it is a good plan to extract all the honey in the brood-chamber after the 15th of May, and feed it back. Now, either of these plans will lead you through the season to a honey crop, but if you mix them, you may do the wrong thing at a time when it would prove to be worse than to have left the bees alone. In other words, the bees may have been better off without your assistance. Never do anything to the bees unless you know why you are doing it—that is, anything you do to the bees is wrong unless you know the reason for doing it, and what you may expect from the manipulation. Don't make the mistake that is very often made by beginners, of trying every sort of hive on the market. Take some **successful** beekeeper as a guide in the sort of apparatus to use, and have everything in your yard interchangeable, so that any piece you pick up will fit on any hive in the yard. It is very disagreeable, when you are in a hurry, to find that your hive and super are not the same size. You have to hunt up another super—or perhaps you have none in the apiary to fit, and the loss of time and the worry will make you wish you had paid strict attention to this matter.

Don't attempt to raise queens before you have made a success in raising bees. You must first know how long it takes an egg to hatch, how long it is in the larva state, the length of time in passing from an egg to a bee, how long to hatch drones, and how long to hatch a queen, and then you must know under what conditions the bees will raise good queens. Good queens are the foundation to a successful apiary, and, as a rule, I think, for a time it will be to your financial advantage to buy your queens from some reliable breeder.

Don't take any chances with bee diseases. American and European foulbrood are so widely spread over the country that every beekeeper must be very careful. A very slight mistake may cause you a great deal of work—and possibly the loss of your little apiary. Never leave any honey where the bees can get it, as this is the way the disease is transmitted from one colony to another. Study up on this subject carefully, and I repeat emphatically, **take no chances.** If you discover this dreaded disease in your yard, don't become

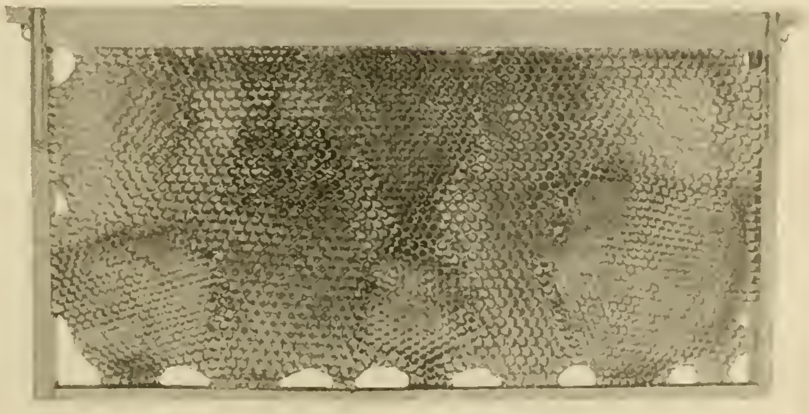

Fig. 4. Natural built comb transferred without selecting the portion composed of worker cells

discouraged. Just go to work and clean it up—follow carefully every detail of the instructions for curing the disease, and you will soon come to the conclusion that it is not so bad after all. Continual watchfulness is the secret of success in handling this disease. It has one advantage—it soon puts the careless, slouchy beekeeper out of the way, so it has a bright side after all.

Don't worry over reverses. We all have them. Just brace up and go at it a little harder. Hard winters and bad seasons are the exception rather than the rule in this locality; there is more sunshine than cloudy weather, and if you stick to your business I am sure you can make it pay you at least a good living with less labor than anything you do on a small capital. An amateur beekeeper is not a commercial beekeeper, but he should be a faddist in every sense of the word, and if so, his enthusiasm will be unlimited, and he will become a commercial man later on. If he is of the right material he will want to talk bees in preference to anything else.

The amateur should study all the phases of putting his product on the market, to entice the purchaser to pay him the maximum price. Cleanliness and attractiveness will accomplish this. The containers and labels should be tasty, and show your product off to the best advantage. For instance, a purchaser is willing to pay a little more for honey in a nice glass jar than for a tin can. He wants to see what he is getting for his money. Amateurs are usually dependent on the local market, and a man's success depends largely on his reputation, so he must never sell anything as first-class unless it is. Better tell the customer it is a little off, but the best you have at the time. Have him taste it, and usually he will buy and be perfectly satisfied.

Amateur beekeepers are usually the ones styled "back yarders" by the bee journals, but these are the ones who are the originators of most of the inventions used by the larger men. The back yarder is constantly studying the bees, as they are his hobby, and often stumbles onto some excellent appliances.

There is one thing he should never overlook, if he is a town beekeeper, and that is, to be in good standing with his neighbors. The best way to do this is to sweeten them. When the honey is taken off, give nearby neighbors a generous sample, and always send the finest you have. This will sweeten their disposition towards the bees, and will make them good boosters for your product.

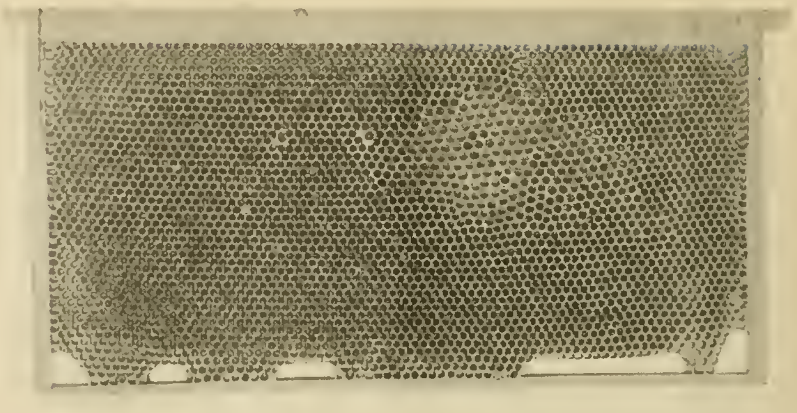

Fig. 5. In repairing a moth-eaten place in a good comb the bees have rebuilt it with drone-cells

When the man with a few bees gets a good crop it frequently happens that he becomes afraid of not being able to sell out, and cuts the price, or does not keep posted on the market, and sells his goods too cheap. A man told me only a few days ago of buying 300 as nice sections as he had seen, at 20c, and at the time the market was $8 per case, or 33 1-3c. Now, this man lost the difference and spoiled the market.

Make preparation in the winter for the coming season. Don't be afraid of having a few more supplies than you would ordinarily need. They will not spoil, and if the honey-flow is good you will need them, and if you did not have them on hand, perhaps you would lose more honey than would have paid for the extra supplies, or perhaps the bees will swarm for lack of room. It is a great annoyance to be short. I know, for I have experienced it. Usually at such times, when you send a rush order to the supply house, the goods come in bad order, are delayed in transit, or the order is mixed up, so that you can't use them, and then you are liable to say things which I will omit.

The things that I have referred to in this paper are things that most men know, but don't think about, and I am merely calling your attention to them as an evangelist calls attention to your sins, so that you may be benefitted in the future.

Nebraska.

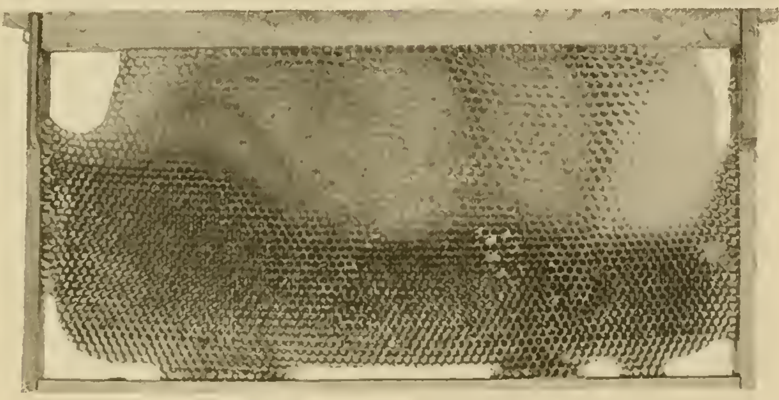

Fig. 6. After a portion of a good comb had been cut away, it was rebuilt with drone-cells

## Don't Get Caught

Sugar is extremely high in price and is hard to get in quantity at any figure. Beekeepers who have always depended upon providing sugar to feed any colonies that might be short of stores, had better be extremely careful about extracting too closely this year. The safe plan is to keep plenty of combs of sealed stores to carry the bees through the winter always on hand and not to depend too much upon later flows, which may fail. For the first time in recent years honey is selling in many places cheaper than sugar. The beekeeper who extracts too closely and has to replace the honey with sugar will lose money on the transaction, even though he does not lose his bees from starvation through failure to secure the needed sugar.

Fifty pounds of sealed honey for each colony on October 1 is not too much for safety. A cold, backward spring may follow a long winter. With the uncertainty of the sugar supply, the wise beekeeper will retain a liberal supply of honey when selling his crop.

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## Increased Honey Production—What to Do With It

By O. E. Timm

During the past few years much has been said and done towards increased production. In Nebraska there has been a substantial increase in the number of colonies and the amount of honey produced, but it is as nothing compared to what is going to be produced in coming years. A majority of the Nebraska honey producers are young men, which means that they will be ready to support any program that will make the honey producer's income steady and reliable.

Under existing conditions, our beekeepers have great diffculty in disposing of more honey than their neighbors will buy. A demand must be created for the additional honey to be produced. I have personally retailed out several tons of honey and I realize the difficulties. Firms must be found that will handle our product more easily than we can do it ourselves. It appears to me that the honey producers' associations thus far are only trying to replace the brokers, expecting to pay the brokers' profit in salaries to their managers. I don't want this to displease any of these people, but I think a more economical way would be to put our honey in the hands of practical brokers who know how to handle farm products.

Nebraska honey, in my estimation, is equal if not superior to the average of western honeys. It ought not to be difficult to give it a name by advertising. Is there a better time than this for it, when sugar is selling at 30 cents per pound? We can increase the demand by spending a little money in advertising Nebraska honey, as the orange producers have advertised "Sunkist Oranges."

I know of a brokerage firm that could handle any amount of our honey, in carloads or single crates. They have a man who has had extensive experience for 10 years past, in grading honey. These people could handle our honey, keeping it stored in a warehouse, insured, as our property, until sold. It would be sold at an agreed price, settled upon through the Executive Committee of our Association. But we would have to agree not to sell any honey, either at wholesale or retail, except through them. Is it not better to dispose of our crop through the regular channels in this way than to go in the haphazard ways of the past?

For an advertising campaign, the same brokerage firm could be used. Our advertising would cost us but little, as we would secure through this firm the services of the papers in which the honey would be offered. Attractive labels, bearing the trade name of our honey, store posters, etc., would give us more advertising than we ever can secure individually.

Our members must bear in mind that **if they want a market for their surplus, they must create it themselves, by advertising,** and must have some systematic method of supplying the trade all the year round, which they cannot do individually.

During the month, the executive committee will hold a meeting and will work out this matter so as to have it in shape before the new honey is ready for the market. I would like to have a letter from each Nebraska man who reads this and get his views.

Some funds are necessary to put this matter in action. About two cents on every dollar's worth of honey that we produce would make quite a good sum. It may take $500 to get the thing under way. But now is the time for us to let the world know that there is such a thing as the honey from which we are expecting to make a living.

Bennington, Nebraska.

## Locality

By F. W. Osler

The beginner in bee culture, if a real enthusiast, will usually subscribe to one or two journals dealing with his pet hobby and in these will find the word "locality" cropping up with a regularity that is somewhat surprising. That localities differ all will agree. The apiarist in California does not meet with the same conditions as the man in New York State, Canada or Texas, but beginners seldom realize that localities a few miles apart also differ and must be carefully studied if the best results are to be obtained. One thing that is absolutely necessary is a full knowledge of the honey and pollen-bearing plants in the vicinity and the approximate date of their bloom. When the bees begin to fly in the spring they should be carefully watched for the first sign of pollen. When this is seen coming in the beginner should make it his business to find out the names of the plants from which it came, the quantity in the neighborhood, its value as a honey plant and anything else by way of information that may prove of value. One of the best aids to this study is a work by Frank C. Pellett, "American Honey Plants." Covering the ground as it does from Northern Canada to Mexico, it is a book that fills a long-felt want and should find a place on the shelves of every beekeeper's library.

Bees use water for brood-rearing and will travel a long way to get it if not obtainable close at hand. In the cold, windy spring days many a worker bee is chilled and lost in the effort to find water. There is a dozen methods of supplying bees with water if your locality is short of this necessary help to brood-rearing. A tub filled wth water, with the surface covered with cork chips, will answer every purpose, and if placed close to the hives, will save the bees many a long, cold flight.

That soil conditions affect localities is well known. Light, sandy soils warm up quicker in the spring; whereas clay soils, heavy with moisture and of close grain, respond less rapidly to the sun and wind. It naturally follows that a locality in a region of light soils would be best for the early breeding of bees and queens. On the other hand, the best honey-flows are generally found in a locality with a heavy soil.

The beekeeper cannot always choose his locality, but he can intelligently adjust his work to suit it, and so at least deserve success if he cannot command it.

That localities differ in honey-flows must also be considered. Here in Ontario, where clover is our most important honey plant, pussy willow, fruit bloom and dandelion aid materially in encouraging brood-rearing to build up our colonies in preparation for the main flow.

The fall flows vary both in quantity and quality. Aster, coming late in the fall, is somewhat of a nuisance; it is unsuitable either for winter stores or table use, but if saved over until spring a frame or two of aster honey can be slipped into a hive without exciting the bees and so save a lot of messy spring feeding. It takes a frame of honey to produce a frame of brood, so colonies found to be light in stores in the spring can be helped in this way.

Pollen has a value all its own. I repeatedly see the question asked as to the best substitute for pollen and so gather from this that some localities are short of this important substance. Then, again, I know of beekeepers who cut solid combs of pollen out of the frames and melt them up, claiming that the bees never use one-half of what they gather. So I would say to the embryo apiarist: study your locality, visit the beekeepers near you; you will find them the greatest gossips on earth, always willing to talk bees and tell what they know, and sometimes what they don't know, but good fellows just the same.

Toronto.

## Fastening Foundation

By Geo. F. Webster

I was considerably interested in reading Mr. A. C. Miller' article in the May issue of the Journal (page 165) on "Stretched Foundation and Sagging Combs," and while I agree with most of his points, I do wish he would "forget" that "brush" as well as the "wonderful wax-tube" and use the despised "spoon" for the melted wax (yes, and forget the rosin, also).

Having had occasion to fill a good many frames with foundation lately and time being very precious, I adopted the following plan with considerable satisfaction: Tilt the frame at an angle of forty-five degrees (more or less), pour the wax in the groove at the highest point, allowing it to run quickly down, stopping it just before it runs off by reversing the frame (one soon becomes quite expert at this). This will be found to be much more rapid than the paint brush and does a much neater job.

Now, if we could get our supply manufacturers to leave the top-bars plain (that is without any groove of any kind) we could save nearly a quarter of an inch of the expensive foundation by putting it in place and embedding the wire, then place a piece of wood ½x½x16⅞ in. with an offset at each end, upon the opposite side, then pour on the wax as mentioned above. This "wax-stick," as I call it, is easily held in place by the thumb of the left hand while the wax is being applied.

Now, if you want real nice, solid combs you can put in a bottom-starter and the bees will (if the frames are given to a strong colony during a good honey-flow) make good use of them by filling the frames solid to the bottom. They should be placed above the brood.

Now, if someone has a better, quicker plan, let's have it, and criticisms invited.

Sioux Falls, South Dakota.

## The Dreamers

I knew a good lady, who in her girlhood, when at school had read Virgil (his fourth book of the Georgics), who, as many know, writes charmingly of bees which hummed, oh, ages ago, on the Sabine hills. Virgil was a beekeeper, but he was, higher still, a poet, and all the crooked wisdom of bee lore and the fond, foolish fancies of hundreds of years before him, he re-minted in a golden currency and immortalized—the silly things as well as the wise—forever.

The lady in question had a lovely garden, good soul, and the pleasant nonsensical things of Virgil hummed in her head until she finally decided to embark on beekeeping. A straw-domed hive it should be, because it looked more picturesque! She consulted her friends—but not me—as to a handbook, a modern one, on beekeeping. So she bought Maeterlinck, which she enjoyed reading almost as much as her great Latin master, and felt set up for the task. Of course, what happened was, the bees had their own sweet way, did what they liked, and lived and enjoyed themselves, much as wild bees would in a wood. There was no honey on the breakfast table, not, at least, from the picturesque, dome-shaped hives. But she did not mind; they formed a pleasant feature in her well-ordered garden, blended with flowers and grass walks and summer sunshine. I feel I ought not to reckon my gentle lady friend with those who should not keep bees. They were part of her fair Paradise and became it. Utilitarianism is an abhorrent thing. God made fair sounds and scents and colors. God made butterflies as well as bees; and so in the scheme of things there is a place, apart from all thought of profit, for the straw-dome hive and the unmolested bee, set in a garden fair.—Rev. A. A. Evans, in the Sussex County Herald, England.

## Honey for Baking

By Kenneth Hawkins

One of the biggest boosts for the use of honey in cooking appears in the May issue of the "Bakers' Weekly," a magazine of national distribution devoted to the interests of the commercial baker. The author, Chas. A. Glauban, after reciting the chemical composition of honey and its better food value than ordinary sugars, gives several recipes for the use of honey in baking.

The following table for a "batch" of dough to make 141 loaves of bread is repeated for Journal readers:

| | |
|---|---|
| Flour, 100 lbs. at $12 per bbl. | $6.00 |
| Water, 56 lbs. | |
| Salt, 1¾ lbs., at .0075 per lb. | .13 |
| Yeast, 1½ lbs., at 30c per lb. | .45 |
| Lard, 2 lbs., at 23c per lb. | .46 |
| Honey, 2 lbs., at 17c per lb. | .34 |
| Malt extract, 1 lb., at 9c per lb. | .09 |
| Cost | $7.35 |

The same recipe using sugar and no honey made 141 loaves cost to the baker $7.53.

The writer of the article is quoted as follows: "There is one form of sugar, probably the first kind of sweetening agent brought to mankind by nature, which will meet the many requirements of the baker. After considerable investigation it has been found that honey is very well adapted to replace cane sugar. Not only to replace cane sugar satisfactorily, but give the finished product a very characteristic flavor, which is wholesome and desirable."

Moral: Beekeeper, see that your baker reads this, and get busy and furnish honey for this added demand.

## The Mid-West Show

It is to be hoped that the exhibits of bees and honey at the Mid-west Horticultural Show, to be held at Council Bluffs, Iowa, in November, will not be confined to Iowa. Indiana apple men carried off some of the big prizes last year and there is no reason why beekeepers from other States may not come in also.

There is a special prize for the best county association exhibit which should interest some of our live associations just now. It is not too early to begin making plans for this show. Those interested should write to Prof. F. B. Paddock, Ames, Iowa, for a copy of the premium list and for instructions for shipping exhibits, in case no one will be in personal charge. The Mid-West Horticultural show is a great exhibition of horticultural products and the beekeepers cannot afford to overlook the opportunity to advertise their product in this connection.

## An Emblem for the Members of the League

At the National meeting at Buffalo, a committee was appointed to secure the making of a button or pin, of better quality and better finish than the cheap buttons thus far issued to beekeepers. This committee now reports that an emblem exactly like the cut accompanying this notice may be secured either as a pin or a screw-back button, in bronze or gold finish, which may be delivered to the beekeepers by mail at 80 cents, provided at least 100 of them are subscribed for. You need not send money till the buttons are ready. Just write that you want one.

Official emblem of the American Honey Producers' League

C. P. DADANT, Hamilton Ill.
J. S. DUNN, Ridgeway, Ont.
S. J. GRIGGS, Toledo, Ohio.
Emblem Committee.

## A Honey-Feeding Larva

By Wm. Cockle

Having set aside some frames of partially capped honey, I was much surprised when examining them in October to see that they were covered with what appeared at first sight as cobweb, but on closer examination I discovered a lot of small whitish larvæ secreted under the webs in the partially filled cells; where the cell was empty the larva was to be seen coiled up in the bottom, but in case the larva was feeding on the honey it had spun a web about one and a half inches in diameter over the comb and either rested on the web or under it. Observation showed that the larva reached down through a hole in the web to feed, but did not remain in the cell until all the honey had been extracted. In a few instances, when the larva had emptied the first cell it had pierced the wall of the adjoining cell, from which it continued feeding; though this was the exception and not the rule—most of the larvæ feeding from the top.

On October 14, finding that the number of larvæ was decreasing and that there were no signs of any pupæ, I removed the balance to a breeding jar, placing in it a little dry earth, a few dry leaves and a small block of comb honey.

When removing one of the larvæ from which to make a description, I took it up on the point of the knife with which I had previously cut the honey. It crawled over the honey without the slightest trouble; the stickiness did not appear to inconvenience it at all or to interfere with its progress; but they prefer to travel upon the dry comb or upon the mat of silk with which they cover the comb surrounding the cell from which they are feeding and in which they leave a small hole over the cell through which they feed.

During the succeeding months the larvæ spun tunneled silk passages all around the jar, extending them both through the comb and also down into the dry earth at the bottom of the jar. They covered the whole interior of the jar with a mat of silk as thick as a good sheet of paper, but could be observed through the glass resting in the tunnels; in these they passed the winter, and as they were kept in a warm room, they were never dormant, but appeared to be feeding all the time.

**Description of Mature Larva**

Length: 16 m. m.

Color: Cream; head light brown, mandibles and lower edge of cheek much darker brown; thoracic segment lighter than head; divided at dorsum, a dark brown splash at stigma. Abdominal segments, with tubercles at 1 and 2, more or less brownish; hairs white.

Last abdominal segment with two-eyed brown rings at 2; from these the hairs are longer than those on the other segments; also a tubercle at 1, with a heavy brown spot, but not ringed.

Anal segment splashed with brown, which extends down to the vent; there are also 4 brown spots.

Feet, concolourous.

### Pupa

Date of pupation not observed, but was probably during March. Color, light golden brown, slightly darker at head and anal segment; a row of raised brown tubercles on stigma, that on the second abdominal segment partially overlapping the upper edge of the wing cover; on the third the tubercle is just above the edge of the wing cover; on the fourth there is a secondary tubercle below and anterior to the major one; the anal segment is without tubercle and is armed with several short spines.

The pupa was enclosed in a white cocoon placed mostly within the tunnels. This fact was mainly responsible for the almost complete loss of the resulting imagoes, some of them being denuded of all scales in their passage through the silk mat, while others were damaged by contact with the honey, the net result being one male and one female secured for identification. The latter agree with some specimens named **Vitula serratilineella** by Dr. Dyar, though the bred specimens are slightly grayer and are not so contrasting in maculation. I am indebted to the kindness of Dr. J. McDonnough for verification of my identification. Quoting from his letter: "I think you will be safe in calling the species **V. serratilineella,** although personally I have never been satisfactorily able to separate this western species from its near ally in the east, **V. edmandsi.** The maculation is identical and the habits appear to be the same in both species, the only difference being that the western form is slightly larger. However, in view of the geographical distribution it seems advisable at present to retain the name **V. serratilineella** for the western form."

The habit referred to by Dr. McDonnough is the fact that **V. edmandsi** is a habitat of bumblebees' nests, in which it feeds. A description of this is given in Packard's "Guide to the Study of Insects."

Dr. Dyar, in Pro. U. S. Nat. Museum, Vol. 27, page 921, records having taken this moth at Shawnigan Lake, B. C., August 17 and September 4; while the Kaslo specimen that he had for identification was dated June 24. The dates of those in my collection are May 19, 29, June 7, 24, 29, July 9, 19, August 12, December 30; the latter taken in the house this winter.

Mr. W. L. Sladen, Dominion Apiculturist, writes me that he has never observed it and Mr. W. J. Sheppard, Provincial Apiculturist, also informs me that, although he has examined thousands of hives in British Columbia during the past six years, he has not seen any evidence of it.

The conclusion is that this moth will only be found amongst stored frames or diseased colonies.

Since the above was written I am informed that lacking honey on which to feed, the larvæ will consume the combs; thus they are to be regarded as a pest.

Kaslo, B. C.

I have read with interest Mr. Cockle's account of the honey-eating caterpillar, and Mr. Malloch and I have looked up the species. It is quite different from either of our well-known wax moths. As Dr. McDonnough is an authority on this group of moths, his opinion that this species (**Vitula serratilineella**) is essentially the same as **V. edmansi** carries weight and throws light on the subject; for **edmansi** has long been known to feed on honey and wax in the nests of bumblebees, and might, therefore, readily transfer its attentions to combs of the honeybee.

This species of **Vitula** must be added to the list of insects affecting apiculture, though it is evidently of minor importance.

J. W. FOLSOM,
Asst. Prof. of Entomology.
Urbana, Ill.

## Rendering Small Quantities of Wax

By F. Dundas Todd

Until last season, when it amounted to 39 pounds, my average annual wax production was about 20 pounds, so I never felt justified in buying a wax press and providing myself with the necessary paraphernalia for rendering. Each year I tried new methods for retrieving the wax, looking for the easiest way with a fair amount of efficiency. For several seasons I tried putting it all through in small lots in a small sack and found this tedious and mussy. At last I hit upon the idea that the best thing to do would be to get the slumgum all at one end, and so reduce this part of the work to a minimum.

The material I have had to handle for several years has been a mixture of old combs and cappings, but from now on the former will be at a minimum, as every spring I have been weeding out all drone combs, even from the extracting supers, as fast as I could get new combs built. When one is pushing for increase one hesitates to destroy a comb because less than a fourth of it contains drone cells, especially in a region that in most years is not favorable to comb building. Last season I got on an even keel, so I fairly well cleaned up every comb that was not pretty nearly perfect. It was the handling of these old combs that gave me the idea that I am now following.

The working of my own apiary is done on Saturday afternoons, and I hold open house for everybody. The work with the hives is usually done in about two hours, and all the time I am answering questions just as fast as a big, interested crowd can fire them at me. That part over we adjourn to the honey house, where the catechism continues for about another hour, and by this time we are all due to start for the city. Any work in the way of repairs and such like that I do for the apiary must be done in the forenoon. In May I overhaul all old combs, destroying the poor ones, and as I find a chance render the wax. I have a kerosene oil stove, and on this I put a small pail with a few inches of water, then feed in old comb as fast as it melts. When I have about a gallon I find it best to proceed to the next operation, which is to strain it. In a hardware store I bought, for the sum of 40 cents, a wire sieve about 8 inches in diameter with wire handles, adjustable in length, such a sieve as a housewife uses for straining soups. This is adjusted on the top of another pail, and I pour the boiling wax through it. The slumgum that remains behind is dumped into a box before it has time to set. Then another batch is handled. A thin film of wax, of course, gathers on the wire, but it readily melts when the new hot batch is poured into the sieve.

Extracting in August is done Saturday afternoons. The supers are carried into the honey house in the forenoon, and there is generally a jam of people around while extracting is going on. The honey is run into the cans by the end of the day; the cappings are covered over to drain for a week. My first job next Saturday is to melt these and get them out of my way. Of course I lose a little honey, but I want everything cleaned up as far as possible before going at the end of the season to my home, which is about a hundred miles away. The wax product at the end of September is in the form of cakes of wax, that need to be remelted, and a box of slumgum. For final disposal, the latter is packed into 10-pound sugar bags, tied tight and brought to the boil in a pail. With a beater about 2½ inches square I work it pretty thoroughly, squeezing out the wax; then pour the fluid into a dish with flaring sides to set. The slumgum gets a final squeezing with the beater and is then dumped into a box, and another batch started on the way.

Here is how the system works out in practice. So as to get fair figures, I got the cappings thoroughly clean and dry. At the start I had 52½ pounds of cappings and old combs. At the first rendering by straining through the sieve I got 27½ pounds of wax, that is fully 50 per cent of the original weight, which, by the way, was a little better than I got in some experiments I made a dozen years ago with the solar extractor, and with the oven method. Working the slumgum through the sugar sack gave 11½ pounds, so that I got altogether 39 pounds of wax. To see if I could do better I put some of the slumgum through a second treatment, but got so little wax that the outcome did not seem to justify the labor. If I ever fall heir to an old clothes wringer I think my outfit would be complete.

When dry, a little slumgum is a fine help in starting a fire.

## Advertise and Otherwise

By W. S. Pangburn

I am sending you photo of the honey display we put in at our district fair last fall. We spent about a week at the fair and arranging for the exhibit, and while we were very busy, not feeling we had the time to spare, after it was all over we considered it was time well spent.

The display, while gotten up on short notice, drew lots of attention, and we received many compliments.

We had plenty of "Facts About Honey" circulars, and it was surprising to me how many people carried them away after examining them, which showed they were interested. We think them the best thing of the kind that has come to our notice. There is something about them that attracts, and people will read them, and that is what we want.

We drove back and forth each day, and took all the 10-pound pails we could carry in the back of the Ford, and came back empty each night, and the last day we could have sold double what we had with us. We sold over 1,000 pounds of honey at the fair, and one merchant bought the entire exhibit, so we had nothing to bring home save what little equipment we had. We have since sold this same merchant $250 worth of honey, and could sell him more if we had it. We have sold many other orders on the strength of the exhibit.

We had the opportunity to meet people face to face, get acquainted with them, and explain any questions they wished to ask about honey, and how it is produced, which isn't a bad advertisement in itself.

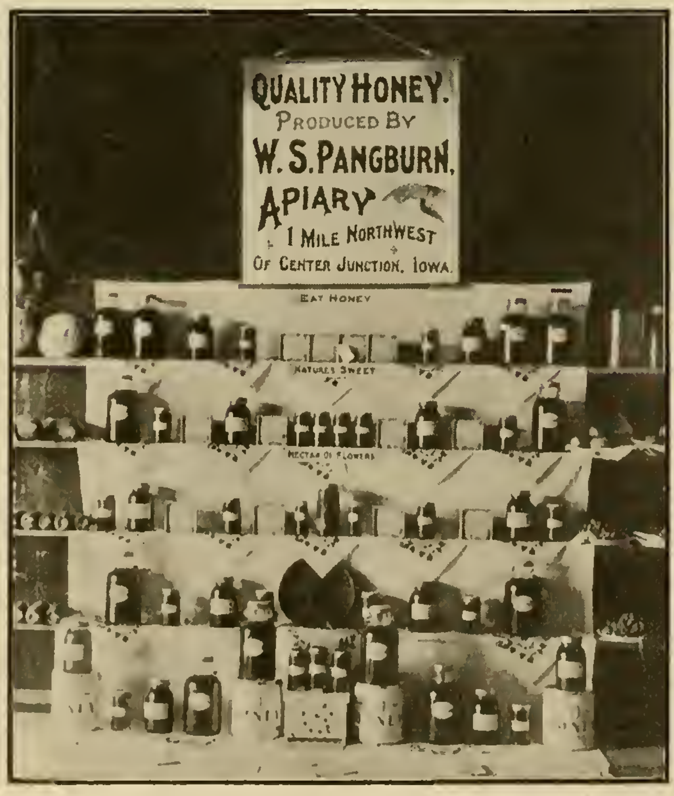
The quart jar, just above the cake of wax, was chunk honey, and was much admired by all. I could have sold this jar a dozen times, and it revealed to me the possibilities of working this trade. This honey, packed in glass, surely appeals to the eye, as well as to the palate.

We have always worried about putting up this honey in advance of the orders, on account of our honey granulating so early, so we experimented last fall with a quart can of chunk honey to determine how long it could be kept without granulating. This can was packed the first of September, and the liquid honey heated to 140 degrees, and after cooling it was poured in the jar with the comb.

This jar has shown no signs of granulation until lately, and only shows slight granules in the bottom now, which proves this honey could safely be held 5 months without serious granulation. How fast it will go from now on remains to be seen.

I am convinced the granulation was started from the drip from the comb honey, which, of course, was not heated. If the comb honey was allowed to drain thoroughly before being placed in the can, it **might** prevent it from granulating much longer, but of course that would take considerable more time. However, if it would do this, we believe it would pay in glassed goods for the merchants, if one had trade enough to justify. Packed in 10-pound pails for family trade, it is doubtful if it would pay, as very few families buy enough ahead to last them until the honey would granulate.

The little hive of bees drew considerable attention, especially from the "kiddies," and I had to keep a close watch on them. I never saw a "kid" that would refuse to stir up a bumblebees' nest or run a stick into a beehive, and then "beat it," if the opportunity presented itself.



Pangburn's display

Of course the bees were dead ones, mounted by setting them on a little spot of glue, and would not stand much punching. We had workers, queen and drone, to show the difference between them.

We believe, if more beekeepers would put a display at fairs and elsewhere, they would find it the cheapest advertising they can get. They would get direct benefits from it, and it would add greatly in putting honey on a level with other foods. It is up to us beekeepers to put it there. Are we going to do it, or let it drop back to the old level of prices that prevailed before the war? We hear considerable about the reconstruction, or destruction of prices. Do you think we can produce honey at 7, 8 and 10 cents per pound with bee supplies and labor at present prices? It can't be done and be a paying proposition.

If there ever was a time when beekeepers should wake up, that time is right now. Honey has, for a long time before the war, sold at unreasonably low prices. Many of us have wished we might be able to get the prices that some of the older members of the craft received years ago. We are now getting them, and while no sane man expects these prices to last indefinitely, we should do our best to prevent them going below where the production of honey becomes profitable. The beekeeper is just as "worthy of his hire" as any other worker. We have done much to relieve the shortage of sugar, and are entitled to a just and reasonable profit from our business. Are we going to work to maintain this profit, or are going to drop back into the old rut, and die on the job?

We have been talking to our trade for some time, that they cannot hope to buy honey as cheap as they did 4 or 5 years ago. Supplies and labor have doubled and trebled, and it would be unreasonable to expect it. Few people are so dumb that they cannot understand it when you explain to them in a businesslike way. There is only one way to keep our prices from going below where they are no longer profitable, and that is for every beekeeper to get alive to the situation, educate customers along business lines, create a demand for honey by advertising, which may be done in different ways, but do not lose your head and slash prices.

Iowa.

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## Costly Mistakes

By F. Greiner

How often have I wished that I might be in a position to begin my life work with bees over again how I would try to avoid the many mistakes made during this period of slow learning! Why cannot those who are coming on now profit by these mistakes made by us? The greatest mistake I made in younger years—and I have not outgrown it now—is that I had too little faith in the business. I was afraid to invest capital in it—borrowed capital, if you please. This timidity manifested itself in various forms. For instance, it cost money to purchase comb foundation to fill the brood-chambers of our hives; but what of that? Would not a colony of bees be in much better shape for years to come with a set of all worker comb? Certainly it would, and the bees would repay in a very short time this expense. To raise comb honey without the use of full sheets of extra light section foundation would be the height of folly. None of that for me any more, although I have "economized" in this fashion for years.

A great many bees, and colonies of bees I have lost during winter by not giving them enough protection. The first book I ever read on beekeeping, written by Fr. Dzierzon, I found the advice given to "protect the bees by packing;" but it was expensive to build winter cases or double-walled hives, so we got along for years without protection, and most always lost heavily during winter. These losses, if expressed in dollars, would have bought the lumber for ten times as many winter cases or chaff hives. The present method of outdoor wintering demands very heavy or thick packing. Winter cases providing for 8 or 10 inches of packing cost lots of money; but let us suppose, for the sake of the argument, that the cost of a four-colony packing case would be $10. If we have done our work well and have our four colonies in best condition in the fall, with sufficient stores in the large hives, we will have four rousing colonies of bees when May comes. Each one of these colonies will be better than four ordinarily wintered colonies and, as one of my friends says, may pay the cost of packing case the first year from fruit bloom alone. But should the weather be unfavorable during this period, we may divide each colony and then have a better lot of bees to gather the clover honey than we would have had we wintered ordinarily. Our crop would be sufficiently greater to pay for our packing cases twice over. Packing cases with lots of packing are one of the best investments of the beekeeper. Many of us do not know what well wintering means; many of us are pestered with poorly wintered colonies, year in and year out. We should do better; it is business.

The third mistake a beekeeper can make, which almost soured my whole nature, is to be contented to carry on beekeeping in a poor honey location. My young friend, get out! There are many good unoccupied fields; find one and stock it up to its full capacity. You will be better off financially.

New York.

## Another Bee Bulletin

"Beekeeping for the Oregon Farmer," by Prof. A. L. Lovett, is the title of a 24-page bulletin issued by the Oregon Agricultural College. Equipment, location and management are taken up rather fully for a bulletin of this kind.

Bulletins of the college are free to residents of the State who apply for them. Address College of Agriculture, Corvallis, Oregon.

## Honey-Making Wasps

Through the kindness of C. S. Engle, the associate editor received a large colony of honey-making wasps belonging to the genus Nectarina, from Rio Hondo, Texas. These insects are common in the tropics, from Mexico to Argentine, but are unknown in the United States except in the lower Rio Grande Valley. We are showing herewith a picture of the big nest suspended in a burlap swing, in the cage in which it came by express.

These insects are a source of great curiosity to nature lovers, as they are unlike anything known in the Northern States. They make paper combs like other wasps, but store honey like the bees. When they sting they lose their stings, as do the honeybees, and they are said to swarm like the bees.

The colony is now established nicely beside the dining-room window, where the associate editor anticipates great pleasure in observing their habits during the summer months. They are working away, apparently as contentedly as though they had always lived there. We hope to be able to give some details of the habits of these interesting insects, later in the season, after there has been opportunity for studying them at close range.

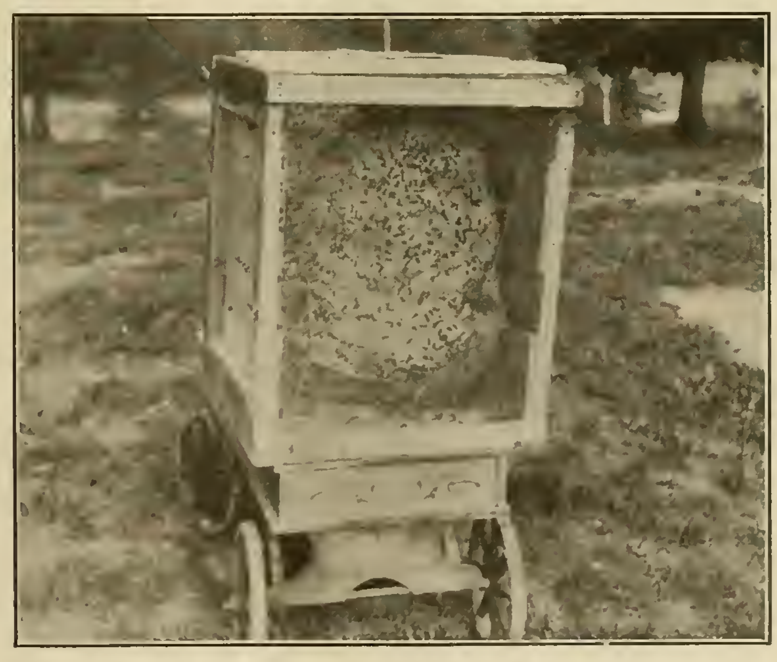
They were left in the window of a local store, for two days after their arrival, before being released, and were the source of much speculation on the part of those who saw them. The following comments are from the Hamilton Press, the local paper:

"Mr. Frank C. Pellett received from friends in the lower Rio Grande valley recently a hive of honey-making wasps. The little beggars look innocent enough, but would surely start something if they got loose. They were securely kept from mixing promiscuously with the landscape by a tight wire netting. The peculiarity of these wasps is not only that they make honey, but that they make their comb out of paper, which they manufacture themselves. The hives, if they may be so called, look like big hornets' nests. The habits and plans and ambitions of these wasps are little known to the scientific world and it will be Mr. Pellett's summer job to get on visiting terms with his visitors and tell their story to the world. If he can induce them to lay off making honey and produce news print, he will write his name on history's scroll in larger type than did old man Gutenberg or any of those old-time guys who first put printing on the map. If he can't get 'em to make news print he might earn our undying gratitude were he to turn 'em loose on the paper profiteers. It would be a pleasurable experience for the printer to see those grafters jump to safety with the same alacrity with which we have to jump to get a bundle of paper on which to print our engines of energy. Sick 'em on 'em, Pellett."

## Dandelion a Secondary Honey Producer in England

J. J. Kettle, who writes the "Dorset Yarns" in the British Bee Journal, has this to say of the dandelion:

"In a pasture field close to the farm there are thousands of dandelions, which is figured in Root's A. B. C. and X, Y, Z of Beekeeping as a fine bee plant. Here there is not a bee to be seen on them, yet before the fruit blossom opened they were on



The nest of honey-making wasps as received at Hamilton the early flowers on warm banks. This flower is singular in its habits—it only opens when the sun shines and rain is not coming. A field may be quite yellow for an hour or so, and then they close up; they open that the ligulate flowers, which are crowded together in one calyx, should be fertilized when pollen is quite dry and the pistillate organ is ripe for inoculation.

"A lot of these ligulate flowers, like the thistle, hawkweeds, etc., all go through the same revolutions. The salsify family always close up at 12 o'clock, and is called "John go to bed at noon," but it will only open when the climatic conditions are favorable; they go to sleep at night, and many of them bend over the flower heads, as men do in prayer—but this is digressing. Bees seem to have the get-rich-quick fever, and leave the flowers where stores are short for the flowers where abundance reigns. If it is so at our farm and other gardens of Dorset, we may assume it is general everywhere."

British Bee Journal of April 19, 1920.

## Experiences of a Novice

By C. E. Knight

I don't know whether my experience the first year, as a novice, would cause even a smile with the older heads.

As a diversion, to take my mind off my work, it was a success. As to knowledge gained, I think it was more than a success, and from a financial standpoint, I think I am ahead. A year ago the first of October, I purchased a stand of bees. There was probably 10 pounds of honey in the hive. The heartsease was in full bloom, and beside filling the lower part of the hive, I took off 14 pounds from the super.

I put a box over the hive, filled in about 3 inches of straw and left it on the summer stand.

The first and only swarm came off May 3. I put them in a new hive on the old stand and moved the old hive to one side.

All I had was 1-inch starters, and for fear they would swarm out while I was at the office, I put a queen trap on. I never had occasion to use the trap, but supposed all standard traps were made for ordinary bees.

Imagine my surprise, if you can, on returning home to find the mesh full of dead bees, and the inside of the trap full too.

You better believe I used a file vigorously on that trap.

The queen laid a few eggs, but like the joy had all gone out of life.

The first of July I made up my mind there was something the matter, and on examination I was unable to locate the queen. I therefore took a comb of brood, from eggs to sealed brood and placed it in the middle of the hive.

Three days later I looked in and found three fine cells started, with plenty of royal jelly.

I have read bee books from one end to the other to find out what happened, but I do not find a thing that looks just like my case.

You take a piece of ice cream, put it in a thimble and let it melt, and you have it as near as I can tell.

I thought I had foulbrood, but upon examination I decided I did not have it.

Every egg and everything up to the sealed brood had melted, but the sealed brood proved to be O. K.

The sun shone on them about one hour, around 2 p. m., but nothing like it happened before or after.

I immediately sent for a queen and introduced her in the regular way, and in a few days everything was moving finely and they gave me 27 pounds of honey in the supers.

The honey flow was just enough to stimulate brood rearing, with very little surplus, so about the first of July I took a hive with full sheets of foundation and placed it on the old stand, taking one frame of brood with the queen and put them in the new hive. I placed the old hive on top of the new one without queen excluder, and both top and bottom entrances open.

It was a comparatively short time until the bottom part was full of brood.

I sent for a queen, and about two days before I thought she would arrive, I set the top part of the hive down, moving the bottom part about one-third its distance to the north and setting the top part right against it on the south.

In three days after the queen was received she was out and at work. I took off about 25 pounds from the new hive and about 40 pounds from the old hive and about 50 pounds of extracted from all and left enough to take them through the winter nicely.

When sweet clover began to bloom, last summer, there was what I called a big black fly, about as big as a big green blow-fly, that swooped down on the white clover, literally by the millions, and as long as they staid the bees did not touch the sweet clover. They disappeared in a night, as suddenly as they came, because, I suppose, all the nectar was gone, for the bees worked very little on it afterward. As I said, the flies were big and black, and had white rings around their eyes.

The heartsease and fall honey plants were nearly a failure here, in fact the whole season was a failure.

Summing up, I think I did remarkably well for a greenhorn. Will some one kindly tell me what was the matter with that comb of brood?

Iowa.

(This must have been a case of overheating. We had dozens of similar accidents, in the old days, before we learned how to increase ventilation for summer days.—Editor.)

## New Manager for California Exchange

Mr. Justice, the former manager of the California Honey Producers' Exchange, has resigned, as already announced. C. E. Millspaugh has been selected as his successor. The new manager has had eighteen years' experience in the marketing of bee products in America and foreign countries. It is announced that the Exchange will inaugurate an active campaign to secure facilities for collective marketing, such as are already enjoyed by the citrus, raisin and other co-operative organizations of California.

## Dope for Bee Stings

I think I have found an immediate relief for bee stings in a mixture of spirits of camphor and tincture of iodine, as follows:

Spirits of camphor U. S. P. 6 drams
Tincture of iodine U. S. P. 2 drams
Glycerine 10 drops.

If applied at once it will, I believe, stop pain and prevent swelling.

A. F. BONNEY.

## BEEKEEPERS BY THE WAY

### A Beekeeper From Kentucky

So far in our brief notes concerning beekeepers of note from various places we have not had much to say about men from Kentucky. However, it is not from lack of material, for there are some good beekeepers in that fine old State of diversified crops and climate. Porter C. Ward is one of the best known Kentucky beekeepers. The fact that he was selected as President of the Tennessee Beekeepers' Association while living in another State, is the best evidence of his popularity. Ward is both a farmer and a beekeeper, but the bees hold first place in his affections, and we hazard the guess that when he decides to lay aside one of his lines it won't be the bees.

Porter C. Ward

## Bees Among the Ruins

Epehy, Meuse, April, 1920.

"Returning in 1917 to the ruins of my village, I suddenly heard the hum of a honeybee. It was working on the blossoms of a willow. I stopped and wondered. I might have asked her: 'Where are you from? How is it that the barbarians have not killed you? Has the Creator given you the trust to restock our deserted villages?' Mystery! The following day, about 200 yards from this spot, I heard a roar. I saw a number of bees about the ruins of a roof. I had discovered the colony, lodged in a spot of difficult access. It was probably this circumstance which had saved it. I secured a basket and a few rags and soon had them in my possession. The combs were suspended crosswise of the entrance in the angle of a ruined roof. A large drone-comb, 28 inches in diameter, was at the back, with smaller combs diminishing towards the front.

"The next day I put them in a ready-made movable-frame hive, filling two frames with pieces of brood. Later I transferred them in a D.-B. hive, and gave them a super, which they filled.

"We were the first people who came back to our village. I was astonished to see the number of willows growing through the ruins. The tussilagos (colt's foot) were also there in large numbers, the white sweet clover and the yellow, the epilobium (willow herb), all growing spontaneously in the plain of uncultivated land.

"I have since bought 4 fine colonies from Mr. ——, whom I thank heartily for the fine manner in which he filled my order."—(Bulletin de la Suisse, May, 1920) Auguste Despagne.

(This reminds us how much misery there is still to be relieved in those unfortunate countries.—Editor.)

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## Combless Packages Versus Wintered Coloines

By Wallace Park

Apicultural Investigations, Iowa Experiment Station.

During the past two seasons, the Apicultural Section of the Iowa Experiment Station has run a comparative test on package bees and wintered colonies for the purpose of determining their relative value in honey production. We offer the results obtained as a report of progress only. The two seasons differed greatly, as did also the results obtained; and next season may give still different results. Conclusions reached are tentative and subject to modification, should future results warrant a change.

In order to determine the comparative value of package bees and wintered colonies, we must know in each case (1) cost and (2) production.

### Cost of Wintering

The cost of wintering is made up of (1) stores consumed (2) packing cases (or cellar) and (3) labor. During the winter of 1917-18, colonies wintered in quadruple packing cases consumed an average of 20 pounds of stores between the close of the fall flow and the beginning of the spring flow. This quantity, at 25 cents per pound, was worth $4.60. The cases used were of the type recommended by the United States Department of Agriculture and were built at a cost of $15 per case. They should last 20 years, but with average care perhaps 15 years would be more nearly their lifetime. This means a depreciation of about 7 per cent per year, which, added to 8 per cent for interest on investment, totals 15 per cent. Then 15 per cent of the original cost, or $2.25, is the cost of one case per year, and one-fourth of this, or 56 cents, is the share of each colony. The packing material used was fine mill shavings. Allowing for a little wastage each year, 12 cents per colony is about the cost of the shavings. Thoroughly dried forest leaves would be just as good, but probably would not be any cheaper, considering the labor of gathering them.

The labor cost for packing and unpacking will vary greatly, depending upon equipment and system, or the lack of them. While it is said to be possible for two men to pack 100 colonies per day it is estimated that the average number packed by two men would not exceed half that number. With labor at $5 a day, 20 cents per colony would seem to be a reasonable cost for the labor of packing; and unpacking costs about the same so 40 cents per colony is allowed for labor of packing and unpacking.

Then the total cost of wintering for 1917-18 was $5.68, with perfect wintering. But in general, a winter or spring loss of one colony in ten may be expected. It would cost $56.80 to winter 10 colonies, and if one dies, the cost is still $56.80, which must be apportioned among the nine remaining, and one-ninth of $56.80 is $6.31.

During the winter of 1918-19, and average of 27 pounds of stores was consumed, an increase of 7 pounds over the previous winter. But the market price was slightly lower this year, so 27 pounds at 20 cents gives $5.40. By referring to the accompanying table it will be seen that the cost of packing cases and packing materials was greater than in the previous year. The cost of wintering in 1918-19 was $6.66 per colony with perfect wintering, of $7.50, with a loss of one colony in ten.

### Cost of Packing Bees

A 2-pound package with untested queen cost $5 delivered and installed on combs the first year, as against $6.25 the second. But a loss of about one package in ten might be expected, so each of the remaining nine would cost $5.55 in 1918 and $6.72 in 1919.

### Gains

The first season , the packages arrived the last week in April and were installed on drawn combs containing some stores. They made an average net gain of 40 pounds as against 60 for the wintered colonies. The packages arrived the first week in May the next season and made an average net gain of 103 pounds, as against 133 for the wintered colonies.

### Comparative Value

To compare the value of the package bees with that of the wintered colonies, it is only necessary to divide the cost of the bees by the number of pounds of honey produced in each case, and then make direct comparisons. (See table.) We have, then, in each case, the cost of producing a pound of honey in so far as the cost of the **bees alone** is concerned. It must be borne in mind, however, that these figures do not represent the total cost of production. If we desired to determine the absolute cost of production, it would be necessary to include interest on all capital invested, depreciation of equipment, and labor through the entire season. But these items would be essentially the same for both package and wintered colonies, and can, therefore, be omitted in determining comparative values.

For the first season, which was a very poor one in this locality, wintered colonies produced honey for 3½ cents per pound less than the package colonies. The second season was probably a little better than the average for the locality. Wintered colonies produced honey for approximately one cent per pound less than did the package colonies. The average for the two years shows a difference of 2¼ cents in favor of the wintered colonies.

### General Considerations

In 1919 cold, wet weather from May 16 to June 12, greatly hindered brood-rearing in all colonies, but especially in the package colonies, The main honey-flow came on before the package colonies had a chance to build up. There was no late flow of any consequence.

In 1919 there was no real period of dearth from the time the packages were installed until the middle of September. Some of the package colonies stored surplus from basswood. The wintered colonies, however, were stronger and stored much more from this source. A late honey-flow enabled the package bees, which had just reached the peak of production, to pile up a substantial surplus, while many of the wintered colonies stored only a moderate amount at this time, due to the fact that they had passed the peak of production earlier in the season.

### Conclusions

In a locality where there is a light honey-flow during the early part of the season, with the main flow coming in the fall, package colonies may be expected to be as profitable as wintered colonies. Only under the most favorable conditions can package bees be expected to store much surplus from an early honey-flow.

Unfavorable conditions during the building-up period in spring, retard brood-rearing in package colonies more than in wintered colonies.

Results so far indicate that package bees cannot be relied upon to take the place of wintered colonies, altogether, but that they may be profitably employed to replace winter losses or to make increase.

**Combless Packages Vs. Wintered Colonies**

| | '17-18 | '18-19 |
|---|---|---|
| Wintered Colony. | Cost. | |
| Stores consumed in wintering | $4.60 | $5.40 |
| Packing cases | .56 | 71 |
| Packing material | .12 | .15 |
| Labor of packing and unpacking | .40 | .40 |
| | $5.68 | $6.66 |
| An expected loss of 1 colony in 10 brings total to | $6.31 | $7.40 |
| Package Colony. | | |
| 2-lb. package, untested queen, delivered | $4.75 | $6.00 |
| Labor of installing in combs | .25 | .25 |
| | $5.00 | $6.25 |
| An expected loss of 1 package in 10 brings total to | $5.55 | $6.72 |
| **Net Gain** | | |
| Wintered colony | 60 lbs. | 133 lbs. |
| Package colony | 40 lbs. | 103 lbs. |
| **Comparative Cost Per Pound Produced** | | |
| Wintered colony | 10.5c | 5.5c |
| Package colony | 14.0c | 6.5c |

*Does not include interest on investment, depreciation of equipment nor labor through the summer.

(In our opinion, bees as carefully packed as the above were reported to be should not lose one colony in ten during the winter. Therefore we can put that much to the credit of wintered colonies. The above comparative statement is certainly very interesting.—Editor.)

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## A Honey Gate

By A. F. Bonney

The threading on the average commercial honey gate, as furnished in the past, will not fit the screw-tops of cans, and is, therefore, worthless. Make them yourself, in this way:

Cut a piece of heavy tin 3x5 inches and with a tinner's die cut a hole in the center 1½ inches in diameter.

Cut 1

Next bend the edges up three-eighths of an inch on either side.

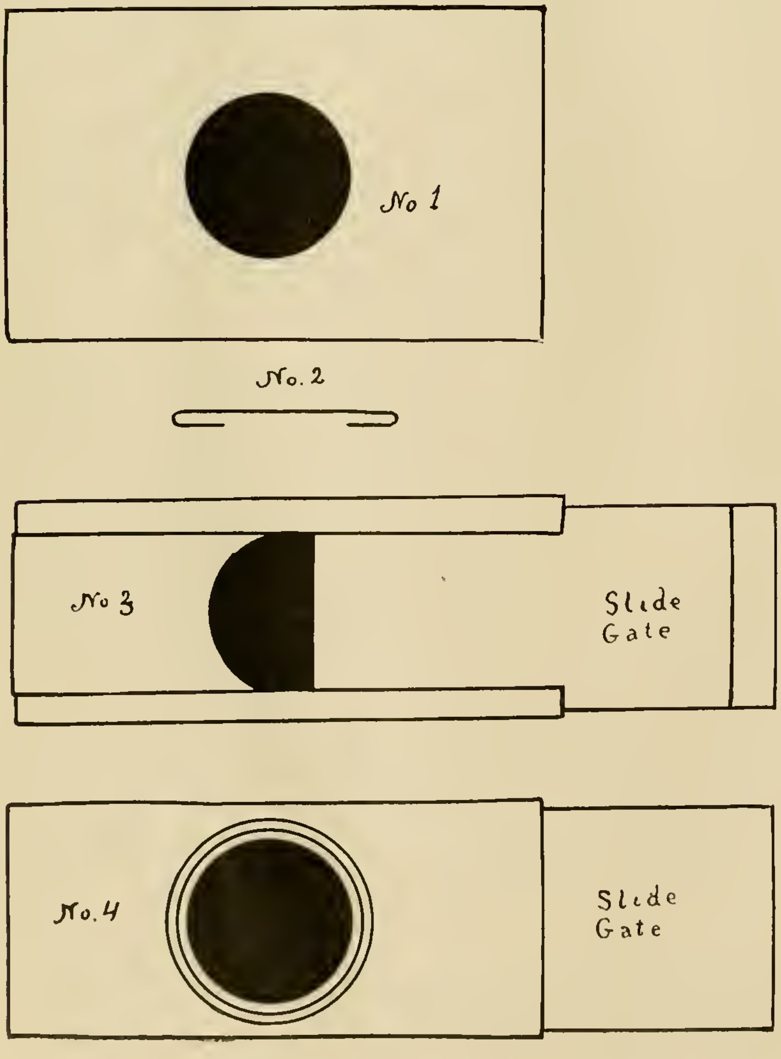
Cut 2

Cut a strip of tin seven inches long which will slide tightly in the folds of No. 1. Fold the end to form a handle.

Cut 3

Now cut the screw-top from an old can and solder it to No. 1 by its upper edge, and the job is done. If you are not handy at this kind of work, any tinner can furnish the article.

Cut 4.



Bonney's home-made honey gate

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## Swarm Control

By W. J. Sheppard

Some method, or other, for the control of swarming, or, in the event of swarms issuing, the building up of colonies to pre-swarming strength, as soon afterwards as possible, is of paramount importance in honey production. Here in British Columbia, where we usually experience short honey-flows, there will be swarming galore as soon as honey begins to come in at all freely, unless some measure has been taken to check or control it, and so prevent the honey crop being curtailed, or, as sometimes happens, being lost altogether, through want of such precaution.

A simple method to check swarming, suitable to British Columbia conditions, is to place a second story of built-out combs, or, full sheets of foundation, above the brood-chamber, as soon as the bees begin to get crowded in the spring, adding supers afterwards, as required, above a queen excluder. This will provide the queen with abundance of room for egg-laying, giving her access to 20 frames in a 10-frame hive, and 16 in an 8-frame.

Needless to say, colonies will, by this means, become very strong, and be in the right condition to render a good account of themselves when the honey flow comes. The queen, after a short time, will ascend into the second story and make this her headquarters, so that, as a rule, there will not be very much brood below. Just before the commencement of the honey-flow the queen may be found and put down in the bottom story, below the all-wire queen-excluder. Then, as the brood hatches out, the bees will fill the combs with honey. It is advisable to search through the combs in the second story, on the ninth day after the queen has been put down, in case queen-cells have been built which should be destroyed, unless required for nuclei, or for requeening. Some prefer the excluder to remain on the top of the second story all the season, without troubling to put the queen down.

What is often referred to as the Demaree plan for swarm control is an excellent method and in favor with many up-to-date beekeepers. It is simple in application and can generally be relied on to give good results. As soon as the brood-nest becomes crowded, all the brood, except one, or two frames, is placed in a second story over a queen-excluder, and the queen left below, empty combs, or full sheets of foundation being added to fill up the vacancies. By this means the queen is provided with abundance of room in advance of her requirements, the conditions being much the same as if she had been put into a new hive with a swarm. The colony, by this means, builds up quickly, so that there is a tremendous working force in readiness for the honey-flow. It may sometimes be found advisable later on to repeat the operation of raising the brood into the second story. On the ninth day afterwards, it is necessary to examine the combs in the second story, in case queen-cells have been built, which should be destroyed if not otherwise required. Queen-cells are not so likely to be started if an all-wire queen-excluder is used instead of a zinc one.

Another method that has given good results in some seasons, when the conditions have been favorable, is to place the queen with one or two frames of brood in a second story, above a zinc excluder, leaving the remainder of the brood below. Queen-cells will then usually be built in the queenless part, and on the ninth day afterwards all but one are destroyed. After the cell that is left hatches out, as the young queen is below the excluder, she is able to fly out and get mated, so that there will be two laying queens in the hive. The old queen can be removed later and used for a nucleus, or, if she is too old for further service, can be destroyed. Queen-cells are more likely to be started below if a shallow super is placed between the two stories, using the two queen-excluders. By this means, if it proves successful, hives can be easily requeened each year.

With the adoption of any method to endeavor to prevent swarming there will doubtless always be a certain percentage of colonies that will swarm. In this case nuclei can be made by dividing up the brood-combs, giving two or three to each nucleus, taking care that each has a good queen-cell. The swarm can then be returned to the old stand, putting it on built-out combs, or, if these are not available, full sheets of foundation, leaving the supers in the same position as before. If increase is not wanted, all the brood can be removed and placed in a top story, above the supers, with a queen-excluder between, and the swarm returned below. If this is done a small opening may be left in the top story for a young queen to fly out and get mated, all queen-cells but one having been previously removed. The young queen, when mated and laying, can be used for replacing the old queen.

The liability to swarm is more pronounced, in spite of whatever method may be employed to control it, by the presence of old queens. Most beekeepers find that it pays best to make a rule of keeping only young, vigorous queens, and, when a good strain has been secured, to breed their own queens from their best colonies from year to year. Colonies headed by young queens go into winter quarters better and can be usually relied on to come out stronger in the spring than those with old queens, besides lessening the tendency to swarm the following season.

The provision of adequate ventilation is a very important item in the control of swarming. Overheating, through want of sufficient ventilation, will cause bees to swarm prematurely, sometimes even before queen-cells have been commenced. When this occurs, the internal conditions of the hive have become unbearable to the bees and have to be remedied quickly. Sometimes brood will be found to have died through lack of ventilation and consequent overheating. Too high a temperature within the hive will occasionally cause the combs to melt down and ruin the colony. Single-walled hives, on which the hot sun pours all day long, are more likely to be affected in this way than those protected with double walls or an outer case. In the interior of British Columbia we find that, with the hive-cases that are now so largely in use, and which have a packing of 3 inches all round, as well as underneath the brood-chamber, a summer entrance 1 inch deep extending along the full width of the hive is sufficient, if porous coverings, such as sacking, are used above the frames. With single-walled hives this sized entrance is often insufficient, and additional ventilation is needed. This can be provided by pulling the supers forward to allow a current of air to circulate.

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### A Good Meeting

One of the largest meetings of beekeepers of recent months was that of the East Tennessee Beekeepers' Association in connection with the State Farm Congress held at the University at Knoxville in May. About 275 beekeepers were in attendance. The size of the attendance speaks volumes concerning the interest in honey production in Tennessee. Tennessee has a delightful climate and some of the finest people in the world.

## DR. MILLER'S ANSWERS

Questions are answered in order received. As we receive more questions than we can answer in space available, two or three months sometimes elapse before answers appear.

### Wintering

1. I frequently note the theory of wintering bees in two hives, a hive and super. I also note, in "Fifty Years Among the Bees," that two colonies may be successfully wintered in *one* 10-frame hive, cellar wintering. In actual practice, which plan is best? I like the idea of two colonies in one hive, because all my bees are summered in outyards. If this plan were employed, would it be of any advantage if the division board was partly of wire cloth for greater diffusion of heat and hive odor?

2. In setting a weak colony over a strong one in spring, Alexander method, is it best to use screen cloth for a few days between the hives, or is newspaper better? Will the bees have trouble and fight through the screen? The screen would be easier to put between the hives, especially on a windy day. MAINE.

Answers.—1. It would be better if all colonies were so strong that there would be no object in wintering two of them together. But if you have two weak colonies there will be a gain in the matter of heat by having them in one 8-frame or a 10-frame hive with a thin partition between the two sides. I never tried wintering with one colony over the other, but think I should much prefer the colonies side by side in the same hive. For one thing, this makes it much easier to shift the colonies into two hives side by side in the spring than it would be if one colony were over the other. There would be nothing gained by having the partition partly of wire cloth, and possibly something lost. You don't want the same hive odor, as the colonies are not to be united, and there may be just a little danger of one of the queens being killed if there is any communication between the two sides. The bees crowd up against the partition at each side, forming a single cluster, and this they could not do with one hive over the other.

2. Haven't you got two things mixed? Newspaper is used when the two colonies are to be united. The Alexander plan in spring is to put a weak colony over another, preferably a strong one, temporarily, so that the weak one may have the help of the heat in building up. In this plan newspaper should not be used, and I rather think it would be better not to use wire cloth, using only the excluder and allowing the lower hive to stand uncovered a little while before setting the other on it, and then putting on the excluder and upper hive as softly as possible.

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### Making a Living With Bees

I have now thirteen colonies of bees.

Do you think I can make a living in the bee business, and would you give me some of your good points, if you think there is a living in it for me? Our honey crop here is mainly white clover, which lasts from about June 1 to August 1. I have $500 of money which I can use in the business. Should you think I can clear about $100 net money per month for a living? PENNSYLVANIA.

Answer.—The problem is whether, with 13 colonies of bees and $500 to invest in more bees, you can make $100 a month, or $1,200 a year. You might be fortunate enough to buy bees at about $5.75 per colony, thus getting 87 colonies for your $500. That, with the 13 already on hand would give you an even 100 colonies. If you should harvest 100 pounds per colony you would have a total of 10,000 pounds, and at 25 cents a pound that would bring you $2,500, or more than double the desired $1,200.

That's what might be. But it might be quite different. Even if you had the hundred colonies, and make sure of 25 cents a pound for all the honey you could produce, the yield per colony will always be an uncertain factor. Like enough it might be safe to count that in a series of years you would come out all right, for the years of failure would be overbalanced by the good years, but you have no way of telling when the bad and when the good will come; and suppose the first two or three years fall below the average, then where are you?

Your safe way is to continue the bees as a side line and drop all other things only when you get enough ahead so that you can stand a year or two of dead failure in the honey harvest.

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### Bureau Hive—House Apiaries

1. In the March Journal, just to hand, page 93, 4th line, 2nd column, I note reference to "Simmons' bureau hive." I would like to know about the "bureau" hive. I have never seen reference to it before.

2. Also about construction of "house apiaries," illustration of one being given on that

same page as used by a Massachusetts beekeeper. GEORGIA.

Answers.—1. Simmons' bureau hive is evidently a hive of British Columbia, for our knowledge of it is as short as yours. We have no idea of its being anything valuable.

2. House apiaries are usually constructed as houses, with single walls and rows of hives on both sides. They are mostly used in crowded quarters, although some beekeepers, such as Mr. F. J. Strittmatter, of Ebensburg, Pa., use them on the farm. In Switzerland there are more apiaries in houses than in the yards. Hives are placed in one, two, and even three tiers. It is probably rather unhandy to have more than two tiers, as one has to use a step-ladder to examine the upper tier. The question of house apiaries was discussed at length in the March, 1917, number of the American Bee Journal. Their main advantage is in sheltering bees well for winter, while leaving them free to fly on warm days.

### Good Crop—Moths

1. I started in last spring with 28 hives; got 2,100 pounds surplus chunk honey. How does this do for a short season, as it rained all the spring and was too dry in the fall?

2. When I began to put my crop on the market I would take off say 12 or 15 supers at a time, and stack them up in the dining-room for a few days, while I sold it out. I kept it covered up, but moths would get in the honey. How would you keep them out? TENNESSEE.

Answers.—1. That is a very fair showing. I am told that Tennessee is not a very good State for beekeeping. But it is likely that some parts are good and some bad, just as in every other State in the Union.

2. There must have been some eggs laid by the moths on the edges of those supers before you took them in. It is not likely that moths would get into your dining-room to lay eggs, unless you do not have fly screens. When moths are plentiful, as they usually are in the late summer, they lay eggs about every crack, wherever they can smell the odor of combs. To destroy them, you may use either sulphur fumes or bi-sulphide of carbon The former may be burned in the room in a dish. There must be enough to kill the flies in the room. The room is closed during the operation and opened afterwards. With the latter you must not have any fire in the room, as it is an explosive. Read what W. S. Pangburn says on page 90 of the March number. It cannot be improved upon.

### Aluminum Combs

Would it be necessary to have at least one wax comb in a brood-chamber of aluminum comb so as to raise some drones? CALIFORNIA.

Answer—If you wish to rear drones especially from this one colony, it may be necessary to have one wax comb with some drone comb in it. Ordinarily, your other colonies will furnish sufficient drones for the extra colony on aluminum combs which you have

### Beekeepers Taxed

1. Explain why beekeepers or their bee supplies and bees cannot be assessed or taxed. I have had this explained but have forgotten it.

2. Do you know of any side-line beekeepers in Detroit who produce any honey for sale? I would like to get next to them. I am working in the city here and if I could, would like to keep my bees here until I get a better start.

Ernest C. Keenmon,
1023 Vermont Ave., Detroit, Mich.

Answers.—1. If you know of any way to avoid taxation of bees or bee supplies, you know more than we do. Some assessors do not tax bees or their products. But since we expect to get State help, and get it in many instances, there is no valid reason why we should not help to pay the taxes.

2. Side-line beekeepers of Detroit who read this may answer you themselves if they see fit to do so.

### Wintering—Swarm Prevention

1. Last November I banked all my bees in straw, 12 colonies in one row, 7 colonies in another, facing south. I first set them either on bricks or short pieces of 2x4's placing the hives about 4 or 5 inches apart and filling up this space with straw and then piling the straw on the north side and the east and west ends of the rows, about 2 feet thick, and on top about 1 foot thick, and weighting the straw to keep the wind from blowing it away, with short pieces of board and poultry netting, or anything I could get. I wintered 7 colonies successfully this way last winter. On March 2, 1920 bees were flying from every hive and throwing out dead bees that died during the winter. There is only a wood cover on any of the hives, made of seven-eighths pine board with a 1 inch rim on all four sides that fits snugly on the hive. Do you consider this a very good method of outdoor wintering? I make all my own hives, supers, bottom-boards and covers and use the Hoffman frames; hives all 10-frame size. Last year I tried mostly for comb honey, but this year I intend to do a little extracting. I am thinking of taking one frame out of the brood-chamber of each hive and spacing the other nine equally, so as to give better ventilation; then placing a full depth super on without any excluder, put the one frame taken from the lower chamber in about the center of the upper chamber or super with 8 frames containing full sheets of brood foundation wired in. 2. Will this method to any degree prevent swarming? IOWA.

Answers.—1. Yes, when bees have good stores and plenty of them and are placed where they can have a flight when the weather is warm, they should winter well with the shelter you made. The danger lies in bad food with too long winter confinement.

2. Your method will certainly help to prevent swarming, though it will not be an absolute swarm prevention.

### Poisoned Bees—Opening in Hive Body

1. Would you kindly describe the looks of a colony of bees that are poisoned by fruit spray?

2. Also, where the augur hole should be in the hive-body above the old queen, so the young queen may take her flight, as advised by Mr. F. C. Pellett in a former issue of the American Bee Journal? COLORADO.

Answers.—We are unable to describe the looks of a colony poisoned by spray, because we never had such a happening. But if bees die on the way home, or about the hive, without apparent signs of swollen bodies or diarrhea or dysentery, it may be poison. In all spring diseases of bees, such as May disease, paralysis, dysentery, etc., there is a swollen condition of the abdomen and ill-smelling discharges are noticed. However, sometimes the May disease brings about a constipation in which the offensive matter cannot be discharged. I judge that in a case of poison there would be no distention of the abdomen and no unhealthy discharges.

2. The opening for a young queen to pass through for her wedding flight should be in the upper compartment, above a queen excluder and with its entrance on another side than the flight opening of the lower hive. Otherwise the young queen might enter the lower opening and find herself in the same hive with the old queen.

### Bees Dying

I am having some bad luck with my bees. Lost 2 nice swarms last winter; they had honey to live on. I find they all, or nearly all, are dead in their cells. I think they froze to death, for it was a hard, cold and windy winter, with lots of snow. For the last 4 or 5 winters I have not lost any, until this winter; they were well packed. I am troubled with mice. I caught 3 in one hive. I set the small house traps for them. Any suggestions you can give me will be thankfully received. NEW YORK.

Answer.—The bees that died in the cells have undoubtedly starved to death, although they may have been close to some honey. When the weather is very cold for several months they are unable to move sideways on their combs. They keep crawling up towards the top of the frames and finally die of starvation. During the past winter the bees in New York State, which had buckwheat honey and were confined a long time, suffered from diarrhoea, soiling their hives, and many of them died. In your part of the State bees winter better in the cellar than out-of-doors. Even colonies in large packing boxes died for want of an opportunity to take flight. Mice are, of course, injurious. But if the entrances are shallow enough, the mice cannot enter the hives and annoy the bees.

### 10 Frames Vs. 9 Frames

Having a born appetite for honey and none to be bought in my locality, I decided to try the bees for it. After thinking the matter over I decided to purchase nuclei from good beekeepers. In the spring of 1911 I bought five 3-frame nuclei with queens. I got one nucleus of Golden Italians on May 21 that gave me 3 supers of section honey. I got 2 nuclei of three-banded Italians on May 22. One gave me a swarm about the first of August, which was lost on account of my being away from home, and two supers of section honey; the other gave no surplus honey at all, but gave a swarm, August 20, which was saved. They filled their hive and gave ten pounds of surplus in two weeks. I received two nuclei on July 4, one gave two supers of section honey, the other one did not fill their ten frames. The last mentioned were Golden Italians. I have the six colonies of bees stored in the large basement under my dwelling house and they seem to be wintering nicely. I am thinking of using extracting frames and running for chunk honey instead of sections for home use and neighbor trade.

Would it be better for me to keep my hives full with 10-frames, or to use nine frames, giving wider spacing?

I have several trees of black locust and plenty of catnip and horehound which is ready for the bees June 1st, and all other plants adapted to northeast Missouri. MISSOURI.

Answer.—The wider spacing is useful mainly in preventing swarming, as it gives better ventilation. But if you use 10-frame hives, the breeding space is none too large. If you use extracting frames in upper stories, and give your bees plenty of room, they may do well and not swarm too much with the 1⅜ spacing.

### Feeding Bees—Honey Plants, Etc.

1. Can I feed my bees with a sorghum syrup in winter or with sugar cane, or Karo syrup? Which will be best? Bees fly almost every day in winter.

2. When pine trees bloom do they yield honey? They have abundant pollen.

3. Are peanuts good honey plants?

4. How many pounds of honey do bees need in winter here?

5. What time does the heavy honey-flow come in this State? LOUISANA.

Answers.—Sorghum is death to bees in countries where there is any cold weather at all. It may do in Louisiana, but I doubt it. Karo is still worse, and in most instances the report is that the bees won't take it. They might take it if starving. Sugar cane syrup might be a little better.

2. We have never heard of honey from pines except as honeydew.

3. None of the works on bees and honey plants list peanuts as good honey plants.

4. Almost as much honey is needed for bees in the South as in the North, as they breed almost uninterruptedly. But your State is one of the least known as to honey resources.

5. We understand that willow blossom is an early source of nectar in Louisiana, and

that there is alfalfa, locust, tupelo, blackberry, etc. There are also plenty of sumac flowers. Study the flora of your vicinity and post yourself.

### Beekeeping in the North

Do you think it profitable to raise bees as as far north as I live? There is a good deal of white clover in the pastures and also basswood bloom and red clover.

MINNESOTA.

Answer.—Yes; there are many beekeepers not far from where you are. We knew of a beekeeper at Parent, close to St. Cloud, who succeeded well in beekeeping some 25 years ago.

### 4x5 Sections

I have been experimenting on bees for some years, and I started with the 10-frame Langstroth hives, everything new. I have equipped all my hives with the new No 4 super, taking sections 4x5. (I bought these supers thinking I could use them for extracted honey, providing I should care to use them for that purpose). I produced some nice sections, but they are easy to turn over, and I believe I should like the 4¼x4¼ a little better, everything considered, but I could never use them for extracting supers if I wanted to when I get a few more colonies.

Is there any way I could use the 4¼x4¼ sections in this super? I can get all the empty shipping cases I want of the grocer of this size (been used, but good as new), and can buy them at a little price. The 4x5 section I should have to buy new

I wish you would tell me whether to go ahead with the No. 4 super, or would you discontinue it. I will have to buy several supers this spring. I am going to increase to the limit, and some day I might have a good many colonies.

I could not get along without the American Bee Journal.

ILLINOIS.

Answer.—The 4x5 section is a nuisance, but it was a matter of novelty when first issued. If your supers for these sections are similar to those I know of, you can use extracting frames of the 5⅜ depth in them. You can also use 4¼ sections in them, but in that case you must cut those supers down ¾ inch and change your inside fixtures to fit the sections. As to advising you on this matter, it is difficult to do so.

### Transferring, Requeening, Spray Poison, Moths

1. I have frames of honey from colonies that died this winter. Could I not transfer from a box hive into them any time before fruit blossom time?

2. When is the earliest date that it would be safe to requeen here?

3. How many days should the colony be without a queen before they are given a young queen?

4. Is there any way to prevent the fruit spray from killing the bees?

5. What can I use to keep moths from stored combs?

IOWA.

Answers.—Yes, you can transfer onto those combs at any time. But you will surely want to save the brood from those box hives, and you will do it with more ease during fruit bloom.

2. Any time when you have the queens. If your bees must rear their own queens, better wait till near the end of the crop or after.

3. I prefer to introduce the young queen just as I remove the old one. If you can cage the old queen for an hour in the cage and then put the young queen in her place, you will have as good a chance as it is possible to have. Leaving a colony queenless till they know it and try to rear another is just that much against your success.

4. Try and get your neighbors to keep from spraying till the bloom has about fallen. It does not pay them to spray in bloom. We have never had any bees killed by spray; yet they spray fruit trees in our vicinity.

5. As answer to this, read the splendid article by Pangburn on page 90 of the March number. There is nothing better, and we could not give you so detailed an explanation in the Question Department.

### Raising Queens

1. I grafted 15 Doolittle cell-cups with royal jelly, warm temperature, and gave to colony preparing to swarm, after destroying their natural cells. Ten cells accepted, drawn out and sealed. After sealing, bees built comb around nearly every cell, and at end of eleventh day one cell hatched a queen, one cell gave a queen that died shortly after emerging and the other eight had dead larvæ. Larvæ apparently had just passed the pupæ state, but developed no farther. Color [illegible] from brood disease. What happened?

2. For 8 to 10 cells, do you consider the broodless-queenless starting colony and finish over queen-excluder better than puttting brood over excluder with queen below and giving grafted cups?

CALIFORNIA.

Answers.—The statement that the bees built comb around every cell would indicate that they had some room to spare. Perhaps the cells were a little bit isolated and got chilled. Or perhaps you made the mistake to put drone larvæ in those cells. That would account for it still better. If neither of these explanations is the right one, let the rest of the folks guess.

2. A broodless-queenless colony is rarely any good unless just made so purposely. I would prefer the other.

### Size of Dovetailed Hive—Cotton as Honey Plant

1. I would like to know the standard size of the 10-frame dovetailed hive, measuring outside length, width and depth of brood-chamber.

2. Is ordinary field cotton of any value as a honey plant? If so, can the Italian bees extract nectar from the blossoms?

MISSOURI.

Answers.—Length 19⅞, depth 9½, width (Root make) 16¼, (Lewis make) 15⅞.

2. Cotton is diversely reported by different beekeepers. Pellett's "American Honey Plants" devotes three pages to this plant. It says, in part: "In some cotton-growing districts the beekeepers swear by cotton, while in other localities they declare that it is of little value. The character of the soil seems to be a very important factor in the secretion of nectar by this plant." One man writes: "Cotton blossoms furnish a great deal of excellent honey."—Jules Belknap, Arkansas.

Another man writes: "Bees will not work cotton if they can work anything else, even bitterweed."—W. D. Null, Alabama.

The Italian bees certainly work upon the bloom when there is honey in it. They also get honey from its extra-floral nectaries.

### Miscellaneous

1. I have one hive this spring that never seems to work, while other hives do. I have a hive of foundation under it for them to fill out so they will have room to work. I must say, though that they are medium strong and are very heavy in stores.

2. What is a good way to introduce a queen to a colony of bees?

3. Can you suggest a means by which bees can tell their own hive better when in a row?

4. How would it be to have one colony filling out a bunch of frames? Am very short of drawn comb.

5. How would you requeen a hive?

6. What is a good way to increase artificially?

7. Is there any danger of giving a strong colony too much ventilation during swarming season, that is the hive set on four 1-inch blocks? Would it not chill the brood on cool nights? We have fairly cool nights here in May, June and July, with some hot days.

8. Do deep hives prevent swarming?

9. How many pounds of bees are there in the average colony?

10. How many combs (standard) will a pound of bees cover?

11. When you move a hive of bees a couple of blocks distance what is the best precaution to take so that many of them will not fly back?

12. Is western Washington considered very good for bee culture.

WASHINGTON.

Answer.—1. Open that colony some warm day and examine it. They may be queenless. They may not have enough bees to take care of the brood. Perhaps you gave them too much room and they have difficulty in keeping the hive warm in cool weather.

2. Cage her for 2 days, between two of the center combs and release her by putting a piece of honey cappings in place of the stopper.

3. Have some marks of recognition, a bush, some differently marked hives, roofs or hives of different colors, etc.

4. Certainly; by all means have plenty of combs.

5. As we said above, by introducing. Kill the old queen just before introducing the new one. If you have no queen, give them brood less than 3 days old.

6. Take the brood-combs of a colony, leaving the queen and bees at the old stand, and put the hive containing those combs on the stand of another hive, putting the latter in a new spot. Give them a queen if you have one. If not, they will rear one. Buy a text-book and read it.

7. No danger if you give the air only at the bottom. But if you stagger the stories, there may be a possibility of too much ventilation. Watch that.

8. Not always.

9. All the way from 2 pounds to 20, depending on the time of year and conditions of seasons.

10. Probably an average of a comb per pound of bees, if well covered, from end to end.

11. Disturb them thoroughly, so they may know something is wrong at the time you release them. Then place a slanting board in front of the entrance, so they may turn about and look back.

12. There are good spots there as elsewhere.

### Transferring—Feeding

I have 4 colonies, 2 in 10-frame standard hives, 1 in a home-made hive, and 1 in a box hive. I want to transfer all of them into 10-frame hives with full sheet of foundation, because when I hived them I gave them just starters, and when transferring I do not want to cut away any of the old comb. First I intend to transfer the 2 I have in the 10-frame hives into my 2 new 10-frame dovetailed hives. In doing this I will put the old hive over the new, with an excluder between, and leave it so for three weeks. I then intend to take these two hives I transferred from and transfer my other 2 colonies into them the same way.

(a) I intend to start at the beginning of fruit bloom so I will have them transferred before the honey-flow. Will this be all right?

(b) When I transfer the last 2 colonies it will continue into the honey-flow, that is, I will still have the old hives over until the brood is all hatched. When the honey-flow starts, can I put a super underneath the old hive? And will they start to work in the super while the brood is hatching above?

(c) When you feed bees in the spring with a half-gallon tin pail in a super, what size nail do you use to make holes in the cover, and how many holes do you make?

(d) I want to feed the bees in my box hive; would it be necessary to turn it upside down and take bottom off, or feed right on top with the tin pail feeder?

(e) Is pollen a light brown color, and do they put it right at the bottom of the cell?

ILLINOIS.

Answers.—(a) It may work all right. Much depends upon the weather, the strength of the colonies and the crop.

(b) The proper place for supers is not underneath, but on top of the brood-chamber. Their tendency is to put the honey above the brood, not below it. They want it where the robbers will have to go through their cluster to get to it.

(c) If you use a very small nail, you may make as many holes as you please. The honey or syrup will not flow too fast, because the atmospheric pressure keeps it in. Pin holes would be sufficient.

(d) You will need to use your ingenuity. If you have a large hole at the top of the box hive and use a small feeder, it may do to feed on top. Or you might use a Thale feeder and feed at the bottom. I would not like to turn a box hive bottom up, for it would change the location of the entrance and bewilder them enough that they might be robbed.

(e) Pollen is of half a dozen or more different colors, from white to dark brown, depending upon the flowers from which it was gathered. The bees sometimes fill the cells with it and sometimes put it only at the bottom, and even store honey on top of it.

### Bees Between Walls

How can I save some bees that are between the plastered walls and the clapboards on the outside of an old house? The bees enter in an opening in the side of the house. It is a small hole, about 2½ inches in diameter. Is there a way of making a trap to catch the bees as they fly out to the field in the daytime? I don't wish to tear the boards off the building. CONNECTICUT.

Answer.—Removing the clapboards would be by far the best method of procedure. With a good bee smoker, first give the bees a puff at the entrance, keeping an eye to prevent them rushing out. Then remove the clapboards carefully. A good carpenter with a nail puller could remove them without much, if any, damage. When the combs are uncovered it would be easy to force the bees into some sort of a box and remove the combs, transferring them to movable frames in the usual way. Trapping the bees as they fly out would do no good. Having no queen with them they would die.

The next best way is to force the swarm to leave, with the queen, by the use of smoke and drumming. Make a hole above the probable location of the brood-nest. We take it for granted that their present opening is below the swarm. There must be one hole below and one above. Then by driving a lot of smoke at the lower hole and pounding on the clapboards, you will drive them out, queen and all. Do this on a warm day, about the middle of the day. The objection to this method is that the abandoned brood will die in the wall and will cause more or less bad odor.

### Moving—Dividing

I have 16 stands of bees which I set out of the cellar March 30, all wintered in first-class shape. I had 12 stands last year that made me $275 at 20c per pound. Sold it all in my home town and could have sold a thousand pounds more if I had had it.

1. I want to move my bees a mile and a half this spring. Who will I write to to get a permit? Or will it be necessary for such a short distance?

2. I want to divide my bees for increase this spring so that they will build up for clover, as clover is our first heavy crop here. When is the best time to do this, or would you let them swarm? WISCONSIN.

Answers.—1. I do not believe it necessary to get a permit to move your bees that distance or out of the county. The only purpose of laws on moving bees is to prevent the spread of disease, and your intended removal will not cause it. Besides, your success indicates that you already have healthy colonies.

2. You will have to divide very early in order to get your colonies strong enough for the clover crop. Remember that it takes 35 days from the time the egg is laid till the worker hatching from that egg becomes an active field worker. If you divide, you had best buy queens to use in your divisions as you will gain at least 10 days. We certainly prefer dividing to natural swarming. But the latter cannot always be controlled.

### Settling a Swarm

Please tell me how to make a swarm settle down when flying in air. WISCONSIN.

Answer.—A first swarm always settles before flying away to a new home. Secondary swarms sometimes fail to do so. I have often tried to stop a runaway swarm, and I never succeeded, when they were in full flight. Noise never does any good. Perhaps a stream of water from a spraying hose would succeed. But who has such a thing ready? You may help them to select a spot to settle by holding up, on a pole, an old comb.

### Ants

Please tell me in your Journal how I can keep ants from bothering bees, as I have trouble through the summer with them? TENNESSEE.

Answer.—The best way is to find their nest, pour a little gasoline into it and set fire to it. If they nest above the bees on top of the brood-chamber, you can scare them away with a little powdered sulphur, or dry ashes, or salt. Ashes, in a place where they won't get wet, will disgust the ants, especially if they are fine wood ashes. Sometimes a little coal oil rubbed about the places where they congregate compels them to move. If you use gasoline as mentioned, you must be very careful not to have the can within reach when you strike the match.

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Order your supplies early, so as to have everything ready for the honey flow, and save money by taking advantage of the early order cash discount. Send for our catalog—better still, send us a list of your supplies and we will be pleased to quote you.

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This Company are the largest manufacturers in the world who make Bee Supplies. They own their own timber lands, mills and factories, and supply goods direct from the tree to the beekeeper.

Full advantage of this low cost of production is given to the purchaser.

The Apiary Department (which is in charge of experienced supply men, who are also practical beekeepers) maintains a constant excellence of product and offers unsurpassed service.

The Diamond Match Co.
Apiary Department CHICO, CAL., U. S. A.

**West Virginia**

The beekeepers of West Virginia are to have a Pan Handle summer meeting on August 10 and 11, at Elm Grove, West Virginia. Write to Mr. Will C. Griffith, of West Grove, for information. If anyone can make a meeting successful, he can. Wish we could be there.

### New Jersey Field Meeting

The summer field meeting of the New Jersey Beekeepers' Association will be held in Samuel Buser's apiary, near North Haledon, Passaic County, on Saturday, July 10, 1920. The principal features of this meeting will be seasonable manipulations, including treatment of colonies for American foulbrood, by members, under the direction of the State bee expert.

### Western New York Meeting

The annual summer meeting and basket picnic of the Western New York Honey Producers' Association will be held on July 31, at the apiary of Frank W. Churchill, West Valley, N. Y. A good program has been provided and all interested in bees or honey are cordially invited to attend.

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## CLASSIFIED DEPARTMENT.

Advertisements in this department will be inserted for five cents per word, with no discounts. No classified advertisements accepted for less than 35 cents. Count each initial or number as one word.

Copy for this department must reach us not later than the 20th of the month preceding date of issue. If intended for classified department it should be so stated when advertisement is sent.

### BEES AND QUEENS

See Atwater's classified honey adv't.

FOR SALE—Highest grade 3-banded Italian queens, ready June 1. Queens and drone mothers are selected from stock of proven worth in hardiness, gentleness. honey production and disease resisting qualities. Untested, each, $1.25; 6, $6.50; 12, $12; 50, $47.50; 100, $90. Your correspondence will receive prompt attention, and I guarantee satisfaction.
A. E. Crandall, Berlin, Conn.

THE ITALIAN QUEENS OF WINDMERE are superior three-banded stock. Untested. $1.50 each; six for $8. Tested, $2 each. Select tested. $2.50 each. Virgins, $1.
Prof. W. A. Matheny, Ohio University,
Athens, Ohio.

WHEN BETTER QUEENS are raised Victor will raise them. Italians, mated, $1.25 each; six, $7; twelve, $13.50.
Julius Victor, Martinsville, N. Y.

FOR SALE—Five or more colonies of bees in 10-frame standard hives. For further information write.
Benj. G. Lumpkin, Tupelo, Miss.

FOR SALE—Tennessee 3-banded Italians that are vigorous and prolific. No undersized queens mailed Balance of season, each, $1.25, dozen $12.
William F. Morris, Hendersonville, Tenn.

FOR SALE—Italian queens, 3-banded, untested, $1.25; 6, $7; 12, $13. Tested queens. $2.50 each. Robert B. Spicer, Wharton. N. J.

FOR SALE—A few choice Italian queens, $2 each. Reference given.
Jes Dalton, Bordelonville. La.

I WISH TO THANK my beekeeping friends for their courteous and obliging way of doing business, and to inform them that I have no more queens for sale this season.
J. F. Diemer, Liberty, Mo.

FOR SALE—Large, hardy, prolific queens, 3-banded Italian only. Pure mating and safe arrival guaranteed. One queen, $1.30; 6, $7.50; 12, $13.50; 100, $110.
Buckeye Bee Co., Box 443, Massillon, Ohio.

FOR SALE—Queens, untested $1.50, 6 $7.50 Extractors, supplies
R. Kramske, 1104 Victor St., St. Louis, Mo.

FOR SALE Pure Italian queens. Select untested, 1, $1.50; 6, $7.50; 12, $13.50; 50, $55; 100 and over, each $1 Also packages and nuclei. Golden Star Apiaries, San Jose, Cal.

FOR SALE—Pure three-banded Italian queens, bred for honey production, reared by the Doolittle method. Untested, 1. $1.25; 6, $7; 12, $13. Tested, 1, $2.50; 6, $14; 12, $25.
H. W. Boley, Hillsboro, Iowa.

QUEENS, ITALIAN QUEENS—I will have about 100 untested queens a month surplus, for June, July and August. Who wants them at $1 each? Less than 100, $1.25 each.
W. H. Moses, Lane City, Texas.

FOR SALE—Untested golden Italian queens, $1.25 each. Tested, $2 50 each. Satisfaction guaranteed. J. F Michael,
Winchester, Ind., R 1.

BOZZALLA LIGURIAN QUEENS — Obtain your queens from Italy. We take the risk of death in the mail. Select tested Italian queens posted direct from Enrico Bozzalla's apiaries to the customer, $3.50 each. Remit to sole agent, H. M. Stich, Riccartsbar Ave., Paisley, Scotland.

FOR SALE—Simmons' queens, goldens and three-bands, bred from prize winners. Also nucleus.
Allen Simmons, Claverack, N. Y.

FOR SALE—My famous three-banded Italian queens. $1.25 each, six for $7, from June 1 to November. J. W. Romberger, Apiarist,
3113 Locust St., St. Joseph, Mo.

FOR SALE—3-banded Dr. Miller and Walker's queens after June 10. (Am booked full until then.) $1.25 each, 6 for $7, 12 for $13; selects, 25c each higher.
Curd Walker, Jellico, Tenn., R 1, Box 18.

QUEENS—Italian queens of excellent stock will be ready to mail June 1. Untested, $1.50 each; 6, $7.50; 12, $14.
J. D. Harrah, R. No. 1, Freewater, Ore.

FOR SALE—Hardy northern bred Italian queens, untested, $2 each, 6 for $11, May 15 to July 15. Select tested, $3, after June 1.
Dr. C. E. Sheldon, Coeur D'Alene, Idaho.

FOR SALE—Italian queens that will give results; untested, $2; tested, $3; breeders, $10.
A. Beyer, Krotz Springs, La.

QUEENS BY RETURN MAIL

I am now up with all orders and can take care of your wants, large or small. Why not stock up your yard with a good strain of Italian queens? I have them at the following prices, and guarantee safe delivery and make good all queens that are not as represented; free from disease: Single queen, $1.50, six for $7, 12 for $13. Discount on large orders of 50 or more. Tested, $2 each, six for $11. 12 for $20. Breeders, $3.50 each.

A. B. MARCHANT, Jesup, Ga.

FOR SALE—3-banded Dr. Miller and Walker's queens after June 10. (Am booked full until then.) $1.25 each, 6 for $7, 12 for $13; selects, 25c each higher.
Curd Walker, Jellico, Tenn., R 1, Box 18.

FOR SALE—Italian queens. Prices for untested, in June, $1.50 each, $8.25 for six, $16 for twelve; tested, $2.50 each from July 1 to October 1; untested, $1.25 each, $7 for six, $13.50 for twelve; tested, $2 each; Virgins, 75c each. Mismated queens will be replaced if returned in 30 days. Dead queens will be replaced if returned to me by return mail.
R. B. Grout, Jamaica, Vt.

FOR SALE—I. F. Miller's strain Italian queen bees. Northern bred for business from my best superior breeders; gentle, roll honey in, hardy, winter well, not inclined to swarm, 3-banded. Queens a specialty; 26 years breeding experience. Satisfaction guaranteed. Safe arrival in U. S. and Canada. Untested, $1.40; 3, $3.75; 6, $7; 12, $13. select untested, $1.65; 3, $4.50; 6, $8.50; 12, $16.
I. F. Miller, Brookville, Pa., R. 2.

FOR SALE—Hardy Italian queens, $1 each
W. G. Lauver, Middletown, Pa.

FOR SALE—Superior California Queens—Western beekeepers may now secure our famous Italian queens at the following prices: One untested, $1.25; fifty untested, $57.50; one hundred untested, $100. Orders filled in rotation; first deliveries March 1, 1920.
Edson Apiaries, Gridley, Calif.

FOR SALE—Leather colored Italian queens, tested, until June 1, $2.50; after, $2; untested, $1.25; $13 per dozen. Root's goods, Root's prices.
A. W Yates,
15 Chapman St., Hartford, Conn.

FOR SALE—3-banded Italian queens from best honey-gathering strain obtainable; (no disease). Untested queens, $1.25 each; 6, $6.50; 12, $12. Select untested, $1.50 each; 6, $9; 12, $18. Tested, $2.50 each. Safe arrival and satisfaction guaranteed. Your orders filled promptly.
W. T. Perdue & Sons,
R. No. 1, Fort Deposit, Ala.

BOOK YOUR ORDERS for QUEENS now—Goldens, $2; tested, $3; banded, $1.50; tested, $2.50; six or more 10 per cent less.
Clover Leaf Apiaries, Wahoo, Neb.

FOR SALE—Golden and three-band queens. Untested, April, May and June delivery. $1.25 each; $12.50 per doz. Satisfaction.
R. O. Cox, Rt. 4, Greenville, Ala.

MOTT'S Northern Bred Italian Queens— I have breeding mothers place in the south for April and early May queens. Plans "How to Introduce Queen and Increase," 25c. If you want beauty with the best of summer and winter laying birds, try a setting of my Golden Campines.
E. E. Mott, Glenwood, Mich.

FOR SALE—A. I. Root strain of resisting and honey-gathering, leather-colored Italian queens. Untested queens, $1.50 each, 25 or more $1.40. Tested, $2.50 each, 25 or more, $2.25. Select tested, $3. For larger amounts write.
A. J. Pinard, Morgan Hill, Calif.

1920 PRICES on nuclei and queens, Miller strain. Queens, untested, $1.50 each, $15 per doz.; tested, $2.00 each, $22 per doz. One-frame nuclei, $3; two-frame, $5; three-frame $6.50, without queens, f. o. b. Mason, Miss. Five per cent discount in lots of 25 or more. We have never had any bee or brood disease here. Will have no queens except with nuclei, until June 1. Safe arrival and satisfaction guaranteed.
Geo. A. Hummer & Sons Prairie Point, Miss.

1920 PRICES for "She Suits Me" queens. Untested Italian queen, from May 15 to June 15, $1.50 each. After June 15, $1.30 each; $12.50 for ten; $1.10 each for 25 or more.
Allen Latham, Norwichtown, Conn.

FOR SALE—After April 15, our golden Italian queens, untested, one $1.50 or $15 per doz.; select untested, one, $1.75 or $18 per doz.; tested, $3 each. Safe arrival guaranteed.
Tillery Bros.,
R. 5, Georgiana, Ala.

BEES AND QUEENS from my New Jersey apiary.
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"QUALITY" THREE-BANDED ITALIANS from excellent stock; untested queens, 1, $1.50; 6 for $7.50; 12 for $13.50; 50 for $55; 100 for $100.
N. J. James,
1185 Bird Ave., San Jose, Calif.

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See Atwater's classified honey adv't.

WANTED—Beeswax. At present we pay 38 cents per pound in cash and 40 cents in trade for clean, yellow wax, delivered Denver.
The Colorado Honey Producers' Association,
Denver, Colo.

HONEY—Supply your customers, finest alfalfa-clover honey, extra strong cases, probably ready in July.
E. F. Atwater, Meridian, Idaho.

WANTED — Extracted honey. State how packed. Send sample, lowest cash price.
P. Outzen, White Bear Lake, Minn.

FOR SALE—We have a limited amount of our crop white clover, extracted basswood honey, all packed in new 60-lb. cans, 2 to the case. Write for prices.
D. R. Townsend, Northstar, Mich.

FOR SALE—Clover and buckwheat honey in any style container (glass or tin). Let us quote you.
The Deroy Taylor Co.,
Newark, N. Y.

WANTED—White clover or light extracted honey. Send sample; state how honey is put up and lowest cash price delivered at Monroe; also buy beeswax.
L. B. Ross, Monroe, Wis.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendering.
Fred W. Muth Co.,
204 Walnut St., Cincinnati, Ohio.

WANTED—Comb and extracted honey.
The L. H. Snider Apiaries, Auburn, Ind.

## FOR SALE

See Atwater's classified honey adv't.

FOR SALE—120 shallow extracting supers, 5⅜ inch, with full drawn combs (painted), 95c each; 6 10-frame hives complete with wired full sheets foundation combs at $3 each; 40 10-frame hives complete with empty frames and painted, at $2 each; 25 lb. (Dadant) medium brood foundation comb at 65c.
C. H. True, Edgewood, Iowa.

FOR SALE—60-lb. cans, 2 to the case; have been used once for sweet clover; need the room; 40c per case. The Forest Honey Co.,
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See Atwater's classified honey adv't.

WANTED—To buy small extractor; must be in working condition. Address Box 8, Springville, Ala.

WANTED—Your old combs, cappings and slumgum to render into beeswax. We get enough more wax with our well equipped presses to pay for our work.
Dadant & Sons, Hamilton, Ill.

WANTED -Your order for "Superior" Foundation. Prompt shipments at right prices.
Superior Honey Co., Ogden, Utah.

WANTED—Honey, in 5 or 10-lb. cans.
Lang, 1609 Dayton St., Chicago.

WANTED—Undamaged copies of February, 1920 American Bee Journal. Will pay 10c a piece. When mailing wrap so the entire copy is covered.
American Bee Journal,
Hamilton, Ill.

WANTED—Extracted honey in white and amber grades. State lowest price; how packed. Send sample.
Harmony Bee & Honey Co.,
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## SITUATIONS

See Atwater's classified honey adv't.

WANTED—One experienced man, and students or helpers, in our large bee business; good chance to learn. Modern equipment and outfit, including auto truck; located near summer resorts. Write, giving age, height, weight, experience, reference and wages wanted.
W. A. Latshaw Co., Clarion, Mich.

WANTED—One or two good queen-rearing men to begin work February 15, 1920.
Nueces County Apiaries, Calallen, Texas.

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FOR SALE—Soiled cane sugar in barrels at 15c pound. Orders filled in rotation.
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FOR SALE—Second-hand 8 and 10-frame comb-honey supers, for 4x5 sections; 1 2-frame Root honey extractor. Also some extra section holders and fences. If interested, write; will sell at a bargain.
E. P. Fosse,
Box 248, Marion, Ill.

FOR SALE—Used tins, 5-gal., bright inside, washed outside, new corks separate, cases complete, two to case, 75c per case; ten cases or more, 60c per case. One or a car load. Cash or trade for honey. Bruner, the Beeman,
3836 N. Kostner Ave., Chicago.

FOR SALE—10-frame dovetailed hives in lots of one to fifty, very cheap.
Wm. Craig, Aitkin, Minn.

SPECIAL PRICE overstock sale on 1-story, 8-frame S. W. hives. Shipping cases to hold 24 sections 4¼x4¼x1½ Hoffman frames 1½-inch spacing. Modified frames, Jumbo depth, 1½-inch spacing. Ask for quotations.
A. G. Woodman Co., Grand Rapids, Mich.

FOR SALE—Good second-hand double-deck comb-honey shipping cases for 4¼x4¼x1⅞ sections, 25 cents per case, f. o. b. Cincinnati; terms cash with order.
C. H. W. Weber & Co.,
2146 Central Ave., Cincinnati, O.

FOR SALE—Good second-hand empty 60-lb honey cans, two cans to the case, at 60c per case f. o. b. Cincinnati. Terms, cash with order.
C. H. WEBER & CO.,
2146 Central Ave., Cincinnati, O.

SEND us a list of goods wanted and will quote you lowest prices. We are the money-saving house. Price list free. Try us.
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WRITE for shipping tags and our prices for rendering your old combs, cappings, etc. We guarantee a first-class job.
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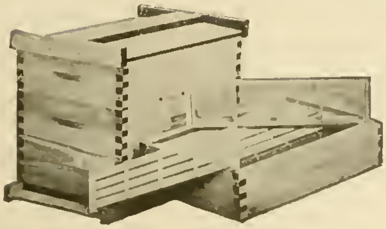

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| PRICES | Before July 1 | | | After July 1 | | |
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| | 1 | 6 | 12 | 1 | 6 | 12 |
| Select untes'd | $1.50 | $ 8.00 | $15.00 | $1.00 | $ 5.50 | $10 |
| Tested | 2.00 | 10.00 | 18.00 | 1.50 | 8.00 | 14 |
| Select tested | 2.50 | 14.00 | 25.00 | 2.00 | 10.00 | 18 |

**BREEDERS**—The cream from our entire stock of outyards, $5 each, usually we can send all queens promptly after June 10th.

Breeders, select tested and tested queens can be sent out as early as weather will permit.

Send for testimonials. Orders booked now.

No bees sold except with breeders, when a two-comb nuclei will be furnished for $5.

**H. G. QUIRIN, Bellevue, O.**

QUINN'S QUEENS OF QUALITY

Have no superiors—"There's a reason." Are Mendelian bred, good qualities accentuated. Gray Carniolans, Gray Caucasians, most gentle of all, prolific, hardy, vigorous, disease-resistant, white comb builders—they deliver the goods.

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**CHAS. W. QUINN, Sabot, Va.**

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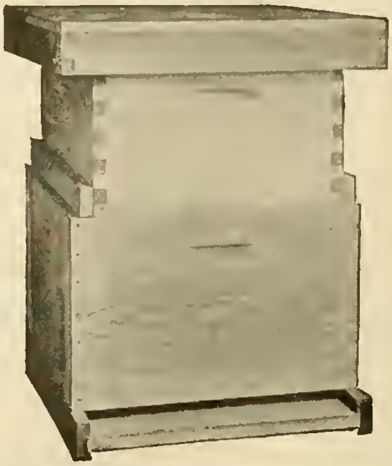

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You get 40 per cent greater brood-comb area than in the "Standard" ten-frame Langstroth.

You get deep frames, large one-story brood-nest, frame space ventilation, excellence in wintering, swarming easily controlled.

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1. Eleven frames, Langstroth length, Quinby depth.
2. Frames spaced 1½ inches for swarm control.
3. Extracting frames 6¼ inches deep.
4. Dovetailed body, regular reversible bottom and metal roof cover with inner cover.
5. Langstroth "Standard" equipment easily used with this hive.

**For free booklet write any distributor of Lewis "Beeware," or to**

**G. B. LEWIS COMPANY, Watertown, Wisconsin**
**DADANT & SONS, Hamilton, Illinois**

CHARLES MONDENG
Bee Keepers' Supply Mfg. Plant.

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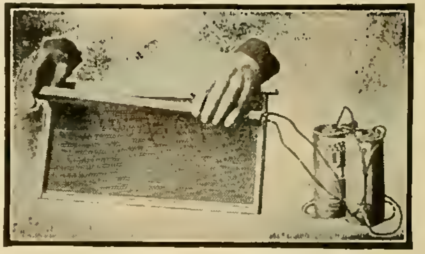
The largest and oldest Bee Supply manufacturer in Minnesota can offer you BEE WARE that will keep that "satisfied smile" on your face. Excellent quotations given on frames, spacing or unspacing. Write to MONDENG about hives and supers. Made of polished white pine.

A word to the wise is usually—RESENTED?
Send for my 1920 Catalog and Price List.
LOOK for the best bargains I've presented.

**Will take your Beeswax in Trade at Highest Market Price**

**CHAS. MONDENG**
**159 Cedar Lake Road MINNEAPOLIS, MINN.**



## ELECTRIC IMBEDDER

**Price without Batteries $1.25**
Not postpaid.

Actually cements wires in the foundation. Will work with dry cells or with city current in connection with transformer. Best device of its kind on the market.

For sale by all bee supply dealers

**Dadant & Sons,** Manufacturers HAMILTON, ILL.

PAT. JULY 30, 1918

## C. O. BRUNO NAILING DEVICE

*Made for the Huffman Brood Frames.* A combined Nailing, Wiring and Wedge Clamping Device. Has been tried and is guaranteed to do accurate work.

PRICE $7.50

Complete directions for operating are furnished with each device.

Manufactured by C. O. BRUNO
1413 South West Street, Rockford, Illinois

EARLY ORDER DISCOUNTS WILL

## Pay You to Buy Bee-Supplies Now

Thirty years' experience in making everything for the beekeeper. A large factory specially equipped for the purpose ensures goods of highest quality Write for our illustrated catalog today

**LEAHY MFG. CO., 90 Sixth St., Higginsville, Mo.**
or J. W. ROUSE, Mexico, Mo.

## PRICES OF QUEENS

| | Nov. 1 to June 1<br>1 | 6 | 12 | June 1 to Nov. 1<br>1 | 6 | 12 |
|---|---|---|---|---|---|---|
| Untested | $2.00 | $9.00 | $16.80 | $1.50 | $8.00 | $14.50 |
| Select untested | 2.25 | 10.50 | 18.00 | 2.00 | 9.50 | 16.00 |
| Tested | 3.00 | 16.50 | 30.00 | 2.50 | 12.00 | 22.00 |
| Select tested | 3.50 | 19.50 | 36.00 | 3.00 | 16.50 | 30.00 |

**Breeders $7.50 to $15.00**

Queens for export will be carefully packed in long-distance cages, but safe delivery is not guaranteed.

"The queen that I got from you last season made honey when the other bees were taking lunch to the fields with them (when they went at all)". H. M. TICHENOR, Centertown, Ky.

2058 Yonge St., Toronto Canada March 19, 1920.

Friend Davis:

The colonies headed by your queens are through this far in fine shape. It was a pleasing sight to see them take their first flight (after 4 months) this last week. What is the price of queens to us folks on this side this year, and when could you start to send me up some? A reply would oblige Yours Respectfully,

P. F. OLIVER.

**No Nuclei, Full Colonies or Pound Packages.**

**BEN G. DAVIS, Spring Hill, Tenn.**

---

# MARSHFIELD GOODS

## BEEKEEPERS

We manufacture millions of **sections** every year that are as good as the best. The **cheapest** for the **quality; best** for the price. If you buy them once, you will buy again

We also manufacture **hives, brood-frames, section holders** and **shipping cases.**

**Our Catalog is free for the asking**

**MARSHFIELD MFG. CO., Marshfield, Wis.**

---

# BEEKEEPER'S SUPPLIES

## QUALITY AND SERVICE

The honey flow is now on. Honey means Dollars to you; don't lose a pound of it by being short of Supplies. We carry a full line of Bee Supplies ready for prompt shipment to you—Hives, Frames, Supers, SECTIONS, Foundation, Extractors, Smokers, Comb Honey Shipping Cases, Tin Honey Cans and Pails. Our goods are ideal in quality and workmanship. Learn more about our goods by sending for our catalog.

**AUGUST LOTZ COMPANY, Boyd, Wis.**

---

# ITALIAN QUEENS

The Old Reliable Three-Banded Italians. The best allround bee to be had. Queens ready to mail April 1. Will book orders now. Will guarantee safe arrival in United States and Canada. Prices for April and May:

Untested,, $1.50; 6, $8; 12, $15
Tested, $2.25; 6, $12; 12, $22.
Select tested. $3 each.

Descriptive circular and price list free.

**JOHN G. MILLER,**
723 C Street, Corpus Christi, Texas.

---

# PORTER BEE ESCAPE SAVES HONEY TIME MONEY

PORTER
BEE ESCAPE
PATENTED

**For sale by all dealers.**
**If no dealer, write factory**
**R. & E. C. PORTER, MFRS.**
**Lewistown, Illinois, U. S. A.**
(Please mention Am. Bee Journal when writing)

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Send for Catalogue of Honey Labels and Stationery.
American Bee Journal

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# BEES

We furnish full colonies of Italian bees in double-walled hives, single-walled hives, shipping boxes and 3-frame nucleus colonies.

**I. J. STRINGHAM, Glen Cove, N. Y.**
**NASSAU. CO.**

---

# WESTERN BEEKEEPERS!

We handle the finest line of bee supplies. Send for our 68-page catalog. Our prices will interest you.

**The Colorado Honey Producers' Association, 1424 Market St., Denver. Colo.**

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Write for Price List and Booklet descriptive of

**HIGH-GRADE**
**Italian Queens**

**JAY SMITH**
**Route 3**
**Vincennes, Ind.**

## HERE THEY ARE MR. BEEKEEPER

**at Newark, Wayne Co., N. Y., ready to answer your call. The best of everything. Just read this list:** Lewis Beeware, Sections, Shipping Cases, Frames, Hives, Hershiser Wax Presses and other supplies, Dadant's Unexcelled Foundation, all standard weights and sizes; also the Electric Wire Imbedder, Bingham Uncapping Knives, including steam heated, with oil stoves and generators. Bingham Smokers, all sizes, with genuine leather bellows; Root's Extractors, all sizes of hand and power machines; Bee Books, written by all leading authors in beedom.

All sizes of Friction Top Pails, and also 60-lb. Cans, new and second hand. Also Cement-coated Nails for nailing beehives and supplies; and all sized spools of Tinned Wire, Bee Brushes, Feeders, Queen-Rearing Cages, Bee Gloves and Capping Melter, and all practical supplies you will need.

A market for your honey or wax and a plant to render your old combs and cappings.

Over 1,000 beekeepers took advantage of this service station at Newark in 1919 for the first time. Now all together for a greater 1920.

New catalog free. Our discounts will save you money.

**THE DEROY TAYLOR CO., Newark**
**(Wayne Co.) New York.**

## MR. BEE KEEPER

You desire your beekeeping to become successful. Then use the best methods and supplies available. These supplies are furnished by us in Dadant's Foundation and Lewis Bee Supplies.

Send us samples of your honey and quote your price.

**WESTERN HONEY PRODUCERS, SIOUX CITY, IOWA**

Send list of your needs or request for new Catalogue to Department B.

## ROOT QUEENS

| | June | July to Oct 1 |
|---|---|---|
| Untested | $2.50 | $2.00 |
| Select Untested | 3.00 | 2.50 |

**QUANTITY DISCOUNTS**

| | |
|---|---|
| 12 Queens | 10% Disconnt |
| 25 " | 15% " |
| 50 " | 20% " |
| 100 " | 25% " |

**THE A. I. ROOT COMPANY, Medina, Ohio, U. S. A.**

## QUEENS, SELECT THREE-BANDED ITALIANS

Reared from the best mothers and mated to select drones.

**Prices of Queens**

| | May 1st to June 1st | | | June 1st to July 1st | | | July 1st toNov. 1st | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 6 | 12 | 1 | 6 | 12 | 1 | 6 | 12 |
| Untested | $2.00 | $ 9.00 | $16.80 | $1.50 | $ 8.50 | $14.50 | $1.30 | $ 7.50 | $13.50 |
| Select Untested | 2.25 | 10.50 | 18.00 | 2.00 | 9 50 | 16.00 | 1.75 | 8.50 | 15.00 |
| Tested | 3.00 | 16.50 | 30.00 | 2.50 | 12.00 | 22 00 | 2.00 | 10.00 | 18.50 |
| Select Tested | 3.50 | 19.50 | 36.00 | 3.00 | 16.50 | 30.00 | 2.75 | 15.00 | 27.00 |

Orders booked now for May delivery. Pure mating, safe arrival and entire satisfaction guaranteed. Wings clipped free. Write for descriptive circular.

**HARDIN S. FOSTER, Columbia, Tenn.**

# Crop and Market Report

**Compiled by M. G. Dadant**

For our July crop and market report we asked the following questions: 1. How is the crop size, comparison with last year? 2. What number of colonies is there compared to last year? 3. Any demand for honey? What price is offered? What price will you hold for? 4. Have you your container supply?

## THE CROP SO FAR

It is yet a little early to make any estimate on what the crop is going to be this year, but there are some indications which would point toward about a normal honey crop.

In the East reports are very poor, especially from New York, where they have had a great deal of drought and do not expect very much of a spring crop. Ohio and Pennsylvania expect about the same as last year, while throughout the whole South reports are that beekeepers will do well if they get as much honey as last year. In Georgia about one-half to three-fourths as much honey has been harvested as at the same time last year. In Mississippi and Alabama probably the crop is a little better, while in most of the other Southern States the crop is probably below the average. In Florida it is much less.

In Texas conditions are extremely favorable. Practically every section of the country there reports an excellent crop, with good prospects for the balance of the year. As a result, beekeepers are very much encouraged, since honey is still selling at a very high figure.

In the Northern States of Michigan, Wisconsin and Minnesota it is a little early yet to make any definite report, but it would seem that Michigan will have many less bees than last year, and the prospect will hardly be as good for a honey flow. Wisconsin reports the finest prospect in years, and Minnesota, also, expects a very good crop.

In Indiana and Illinois reports vary greatly. In some sections clover is yielding well, in others there is not enough clover to make nearly a crop. In our own locality there is a little clover, but so far bees have harvested very little, if anything, and supers are just beginning to be placed on the colonies. Many reports state that clover is abundant, but that the bees are working on it but very little, owing to the drought. Of course, a good rain with warm weather would make the clover yield more plentifully. Missouri reports only a fair yield.

Prospects throughout the most of Iowa seem to be good, and Kansas and South Dakota report fair prospects, also.

Very little honey has been harvested, so far, through the Rocky Mountain region, although indications seem to be that there will be a good flow. The alfalfa has been hurt quite badly in some sections, but this is probably made up by the excellent growth of sweet clover, and it would seem that Colorado would have a little better crop than last year, with Montana about equal to 1919.

Wyoming and Utah expect much better crops than last year, while Idaho has had no flow yet, but expects a fair crop later on.

The western coast has had abundant rain, which would indicate a very good honey flow. The flow from orange blossom in California has been just about up to last year. The outlook for a flow from sage is good and we have no doubt but that the California crop will at least equal that of 1919.

## NUMBER OF COLONIES COMPARED WITH LAST YEAR

The May first report of the Department of Agriculture at Washington indicates that on this date colonies averaged 98 per cent of normal, whereas in 1919 they averaged only 92 per cent. This would indicate that colonies are in better shape than a year ago. However, our own private reports indicate that in some localities the winter loss was extremely severe, and it will be all that the beekeepers can do to make increase and cover all the combs. Our own judgment would be that there will not be nearly as many colonies to gather the crop as a year ago, and we would think it would be about 80 per cent. Of course, this is probably made up by the fact that many beekeepers are buying bees in packages from the South and making increase in this manner, so that it does not hurt their strong colonies at all to cover all combs.

## HONEY DEMAND—PRICE ASKED

So far, very few buyers are out trying to purchase honey, but such as are in the market seem to be offering a good price. Practically all reporters indicate that they will hold for a price of 25c a pound wholesale for their honey, with a good chance of getting it. The Texas crop is moving at a price of about 22c for extracted and 24c to 26c for bulk comb honey.

One reporter in Georgia was offered 20c a pound for his white honey and is holding for a price of 25c. Another from Florida was offered 21c and is asking 23c for amber.

A large commission merchant in California has a car of white sweet clover honey which he is offering at 19c per pound f. o. b. California common points. Orange blossom honey is also being offered at a price of from 20½c to 21½c f. o. b. California points. Practically all of the old stock is cleaned off the market, and owing to the high price and scarcity of sugar, honey is in extremely good demand.

## HONEY CONTAINERS

Practically all of the tin can manufacturers state that they will be unable to supply cans outside of contracts already let until probably the first of August. Developments in the last week or ten days, however, would indicate that the freight congestion is gradually clearing up and it may be possible that these manufacturers may be in a position to get tin plate earlier than this

## CONCLUSION

Our conclusion in regard to honey would be that it is very likely to open at a much higher price than last year, when honey was quoted at from 15c to 18c per pound for car lots f. o. b. California common points. Sugar seems still to be very scarce, and newspaper reports point to the fact that it will be two or three years before France and other European countries will be able to reach normal production on sugar.

**THREE BAND ITALIANS**
**TESTED DISEASE RESISTORS**

PRICES

| June 15 to July 15 | 1 | 6 | 12 |
|---|---|---|---|
| Untested | $1.50 | $8.00 | $15.00 |
| Select untested | 1.75 | 9.00 | 16.00 |

| July 15 to Oct. 1 | 1 | 6 | 12 | 100 |
|---|---|---|---|---|
| Untested | $1.30 | $7.50 | $13.50 | $110 00 |
| Select untested | 1.60 | 8.00 | 14.00 | 115.00 |
| Select tested, any time after June 20 | 3.00 | 16.00 | 29.00 | |
| Select day-old virgins, after June 1 | .60 | 3.50 | 6.50 | 50 00 |

**D. A. DAVIS, Birmingham, Mich.**
**216 Greenwood**

**BARNES' Foot Power Machinery**

Read what J. E. Rarcot, of Chariton, N. Y., says: "We cut with one of your Combined Machines last winter 50 chaff hives with 7-in. cap, 100 honey-racks, 500 frames and a great deal of other work. This winter we have a double amount of hives, etc., to make with this saw. It will do all you say of it." Catalog and price list free.

**W. F. & JOHN BARNES**
**995 Ruby St., ROCKFORD, ILLINOIS**

**Established 1885**

We are still furnishing beehives made of white pine; they will last. A. I. Root Co.'s make of bee supplies kept in stock. Send for catalog giving full particulars; free for the asking. Beeswax in exchange for supplies, or cash.

**JOHN NEBEL & SON SUPPLY CO.**
**High Hill, Montg. Co., Mo.**

**ATTENTION, PACIFIC NORTHWEST BEEKEEPERS!**

We handle a full line of supplies for beekeepers, including **Italian Queens.** Write us your requirements and for our Catalog A. It's **free.**

**SPOKANE SEED CO.,**
906 First Ave. Spokane, Wash.

# WESTERN BEEKEEPERS

were glad to know that the pressure their increasing patronage demanded resulted in the establishment of a branch of the Root Company at Council Bluffs, Iowa, the local point of western shipping activities.

¶ The first season's business here has more than justified the contention of the Root Company, that western honey producers must have a factory and a center of their own. The Council Bluffs branch wishes to publicly thank the many beekeepers for their expressions of interest in us, and their hearty welcome. And to state, also, that it is the determination of this company to keep everlastingly at this business of maintaining the high quality of the Root goods, and of improving---always improving---the promptness and thoroughness of our service.

¶ We are now stocked with all the goods you need to market a maximum crop; of shipping cases, cans and jars. We will be glad to give your order particular attention. We can save you money, time and freight charges. Use us.

**THE A. I. ROOT CO. OF IOWA**
**COUNCIL BLUFFS, IOWA**

CYPRESS DEFIES DECAY

S C M A
TRADE MARK REG. U.S. PAT. OFFICE

CYPRESS LASTS PRACTICALLY FOREVER

ALWAYS MAKE SURE THAT THIS TRADE-MARK IS STAMPED ON EACH PIECE OF

## "*Tidewater*" *Cypress*

*"THE WOOD ETERNAL"*

THEN YOU BUY SAFETY (AND SATISFACTION) FIRST, LAST AND 'TWEEN TIMES

## "ALL-HEART" GRADE FOR BEEKEEPERS' USE

**Southern
Cypress Manufacturers
Association**

ADDRESS NEAREST OFFICE

**1251 Hibernia Bank Building
NEW ORLEANS, LA.**

**1251 Heard Nat'l Bank Building
JACKSONVILLE, FLA.**

# FOREHAND'S THREE BANDS

## THE THRIFTY KIND

Twenty-eight years of select breeding brings these bees up to a standard surpassed by none, but superior to many.

Place your order now for June delivery of queens. We have booked as many orders for pound bees as we can handle this season.

PRICES AFTER JUNE 1

| | 1 | 6 | 12 | 100 Each |
|---|---|---|---|---|
| Untested | $1.50 | $ 7.50 | $13 50 | $1.00 |
| Select Untested | 1.75 | 9.00 | 16.50 | 1.25 |
| Tested | 2 50 | 13.00 | 24.50 | 2.00 |
| Select Tested | 4.00 | 22.00 | 41.50 | 3.35 |

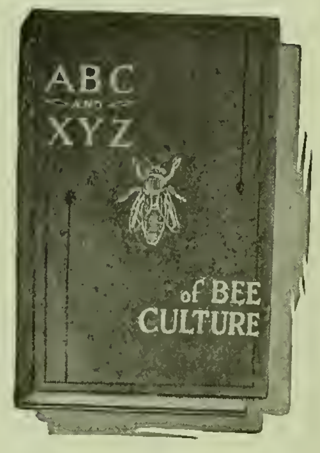
No reduction in prices after July 1 as stated in circular.

**W. J. FOREHAND & SONS, The Bee Men**
**Fort Deposit, Alabama**

# A Great Sales Record of A Great Bee Book

Here is a record for the sale of a standard class book, not often equalled in any field, and never approached before by any bee book.

On July 1, 1919, one year ago, this company completed the printing and binding of 10,000 of the 1919 edition of the



On May 1, 1920, these 10,000 copies of the world's greatest bee book had been exhausted. A new issue of the 1919 edition is now completed, and we are again filling orders for the same. It is the indispensable book to every up-to-date beekeeper eveywhere.

**THE A. I. ROOT COMPANY**
MEDINA, OHIO

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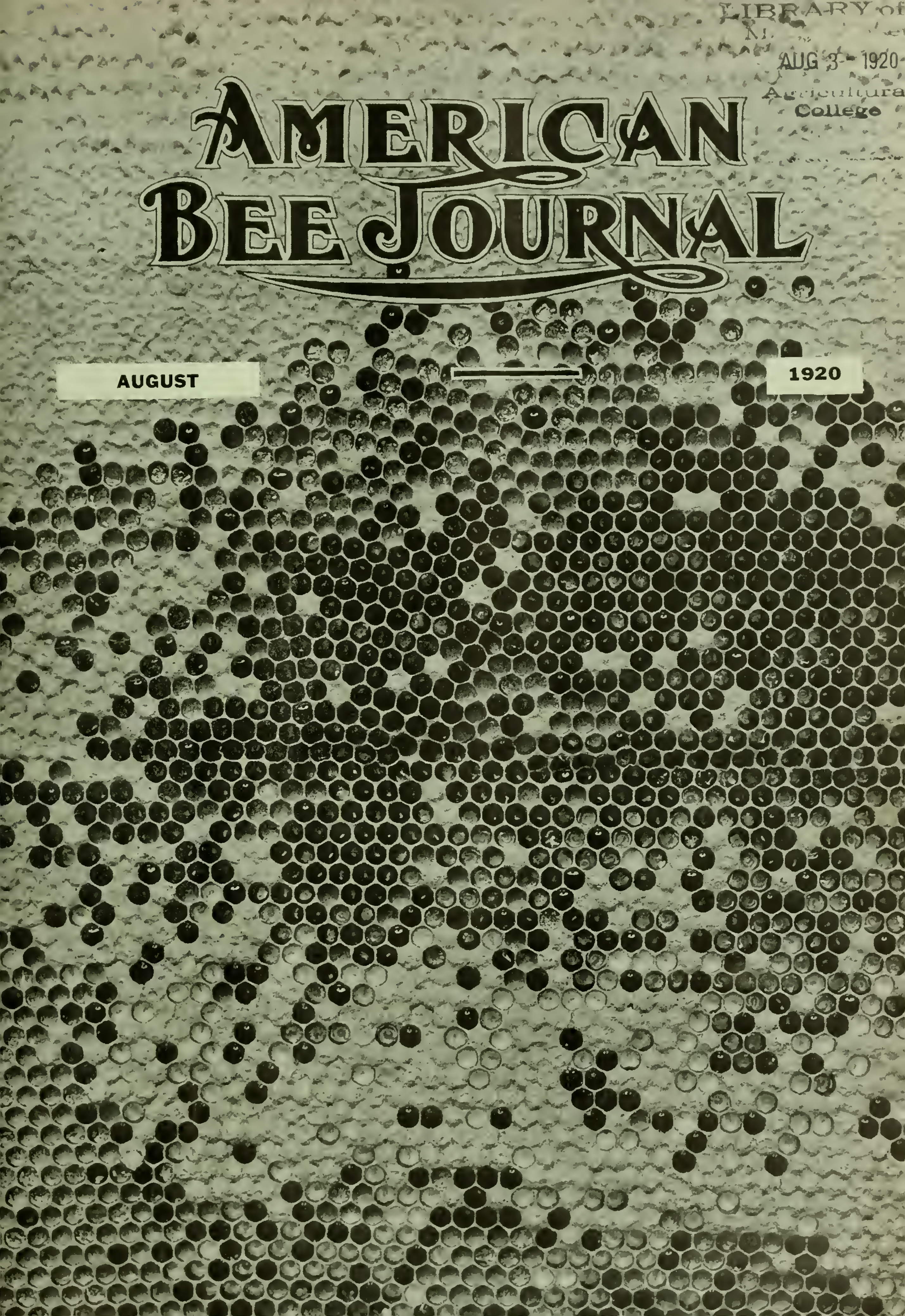
# AMERICAN BEE JOURNAL

AUGUST 1920



# 25% DISCOUNT

## ON SHIPPING CASES AS LONG AS OUR STOCK LASTS

**FLAT CASES, 2-INCH GLASS, 24 SECTIONS EACH, 25 TO THE CRATE**

| | CATALOG PRICES | | CUT PRICES | |
|---|---|---|---|---|
| | 100 Lots | 25 Lots | 100 Lots | 25 Lots |
| 4¼x1⅞ | $50.00 | $13.00 | $37.50 | $10.75 |
| 4¼x1½ | 48.00 | 12.50 | 36.00 | 9.38 |
| 4 x5 | 48.00 | 12.50 | 36.00 | 9.38 |
| Lewis Section Squeezers $4.80 each | | | 3.60 each | |
| Frame Wedge Drivers $1.25 each | | | .94 each | |

We are overstocked on the above supplies and offer them at 25% reduction while they last. Send in your order AT ONCE

## THEY ARE ALL LEWIS BEEWARE

You had better order a **"Muth Ideal Bee Veil"** than be sorry.
$1.60 each post paid.

# THE FRED W. MUTH CO.

**CINCINNATI, O.**

**BEST PRICES PAID FOR HONEY**

Send us samples of your honey and we will quote you a price equal or better than that of any other concern. We buy and sell both comb and extracted honey. Cash remitted in full the same day shipment is received.

*"The Busy Bee Men"*

**BEESWAX RENDERED FROM OLD COMBS**

We pay you the highest market price for rendered wax, less 5c per pound rendering charge. Our special hydraulic steam wax press gets the very last drop of wax from old combs and capping, assuring you maximum profit on them. Write for full particulars.

## THE BEST BEE BOOKS

**THE HONEYBEE**
By Langstroth and Dadant.

A very complete text on beekeeping. 575 pages, attractive cloth binding, $1.50. French edition, $1.75; Spanish, $2.

**FIRST LESSONS IN BEE-KEEPING**
By C. P. Dadant.

Will start you right. 167 pages, 178 illustrations, cloth binding. Price $1.00.

**AMERICAN HONEY PLANTS**
By Frank C. Pellett.

First book in the English language on the subject of the honey plants.
300 large pages, 155 illustrations, cloth binding; $2.50.

**OUTAPIARIES**
By M. G. Dadant.

Valuable to every extensive beekeeper. 125 pages, 50 illustrations; cloth bound.. Price $1.00.

**PRACTICAL QUEEN REARING**
By Frank C. Pellett

Gives all up-to-date methods of rearing queens for the small beekeeper or for the specialist. Cloth bound, 105 pages, 40 illustrations.

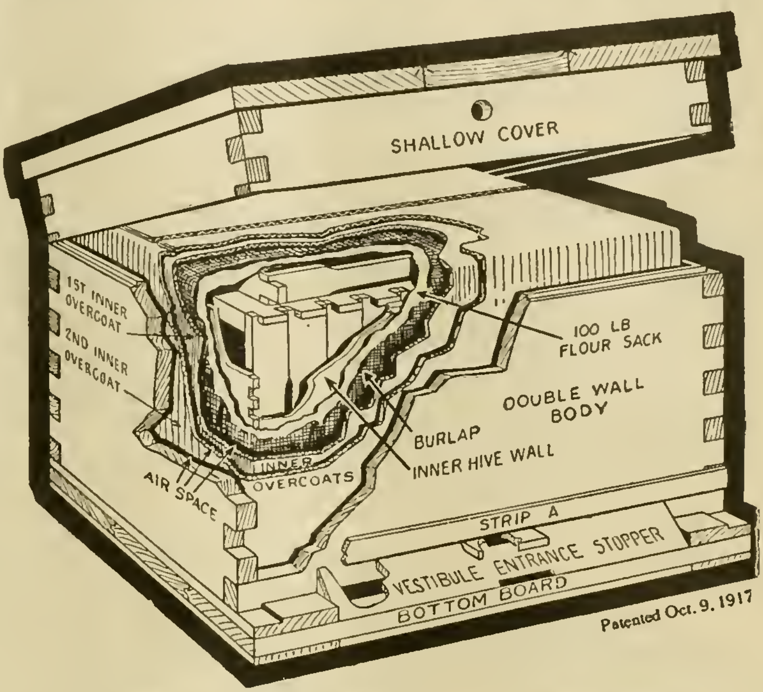
Price $1.00

**1,000 ANSWERS TO BEE-KEEPING QUESTIONS**
By Dr. C. C. Miller.

Answers the questions that other books overlook. Cloth bound, 276 pages. Price $1.25.

**AMERICAN BEE JOURNAL,**
**Hamilton, Illinois**

## WINTER PROBLEM SOLVED
—BY THE—
## HIVE WITH AN INNER OVERCOAT



**FURNISHED WITH JUMBO DEPTH OR STANDARD HOFFMAN FRAMES**

Plan to try out a sample shipment of these hives the coming winter and be convinced of their efficiency and durability. Our winter's loss the past winter of 1919-20 was less than 5 per cent, and this was due to starvation and poor queens. The bees were confined to the hives without a flight for about 120 days. These hives will winter normal colonies perfectly under the most severe conditions. We have many testimonials, too numerous to publish. The two Inner Overcoats with intervening dead air spaces and inner covering or blankets close up about the brood-nest is what does the trick. A person could have any amount of blankets fastened up on the walls of a room and still freeze to death if left in the center of the room without close up protection or insulation. If you can eliminate your winter loses, think what it will mean to you.

Order early, as freight is slow and uncertain and will get more serious as winter approaches. Do not fail to try out a sample shipment. Catalog and special circulars sent on request.

**TIN HONEY PACKAGES**

2½ lb., Friction Top cans, cases of 24
2½ lb., Friction Top cans, crates of 100
2½ lb., Friction Top cans, crates of 450
5 lb., Friction Top pails, crates of 12
5 lb., Friction Top pails, crates of 100
5 lb., Friction Top pails, crates of 200
10 lb., Friction Top pails, cases of 6
10 lb., Friction Top pails, crates of 100
60 lb., case, in cases of 1 and 2
60 lb., cans in crates of 24 and 50

Ask for our special money-saving prices, stating quantity wanted.

**A. G. WOODMAN CO.**
**GRAND RAPIDS, MICH., U. S. A.**

"GRIGGS SAVES YOU FREIGHT"
**TOLEDO**

## NOW FOR THE 1920 HONEY CROP We will buy it, both comb and extracted

We want especially White Orange, White Sage, White Clover, Basswood, Raspberry. Write us what you have, sending samples, and prices asked, in first letter.

**SECOND-HAND 60-Lb. CANS**

These cans used only once, packed in good cases. 10 cases, 70c; 50 to 100 cases, 65c; 100 to 500, 60c.

**BEESWAX WANTED**

**GRIGGS BROTHERS CO., TOLEDO, OHIO DEPT-24**

"GRIGGS SAVES YOU FREIGHT"

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**QUEENS** **QUEENS**

## BEES BY THE POUND

The rush of our bee shipping season will practically be over by July 1st; will then be in position to take care of your QUEEN orders. Just received a picture from a party showing a colony built up from about 2 pounds of bees and a queen last spring (1919) and at that time weighed 330 pounds gross; others in the yard did better than that one. We have had colonies here gather 400 pounds spring crop. Party wrote from Chicago: "The shipment of bees was received on May 7, this year; hived same day; did not examine until 18th, when we found all queens accepted and had laid in three frames. We greatly appreciate receiving such good grade of bees and hope to favor you with larger orders in the future." Another from Nebraska: "Wish to tell you how well pleased I am with the business done with you. Some of the 50 packages had less than 100 dead bees in them. Those queens of yours are the best uniform QUEENS I have ever received, What is your price on 200 two-pound packages with queens for spring, 1921?"
Our QUEENS are hardy, gentle Italians; they throw bees that fill the supers. GUARANTEE safe arrival and satisfaction on QUEENS. With my method of feeding, can ship bees successfully in July and August. Get a few packages and build them for the fall flow or winter. Send for FREE Circular giving reference, prices by parcel post, nuclei, guarantee, etc.

| | 1 | 6 | 12 | 50 | 100 |
|---|---|---|---|---|---|
| Untested Queens | $1.50 | $7.50 | $13.50 | $48.00 | $95.00 |
| Select Untested Queens | 1.65 | 8.25 | 14.85 | 52.80 | 104.50 |

| | 1 | 6 | 12 | 50 |
|---|---|---|---|---|
| Tested Queens | 2.50 | 13.50 | 27.00 | 110.00 |
| Select Tested Queens | 3.00 | 16.20 | | |

1 pound package bees, $2.40; 25 or more, $2.16 each
2 pound package bees, $4.25; 25 or more, $3.83 each
3 pound package bees, $6.25; 25 or more, $5.62 each

Add price of queen wanted when ordering bees.

**NUECES COUNTY APIARIES, E. B. AULT, Prop. CALALLEN, TEXAS**

---

## HONEY CANS

Several cars just unloaded at our Ogden, Utah, and Idaho Falls, Idaho, warehouses—more coming. We have anticipated the heavy demand and can fill your orders promptly. Avoid congested supers and loss of honey by ordering early.

## SUPERIOR FOUNDATION

We are keeping pace with the enormous demand. For real quality specify "SUPERIOR" Foundation. If your dealer cannot supply you, write us for special prices.

## BEESWAX

We are still paying top prices.

"Everything in Bee Supplies."

**SUPERIOR HONEY CO., Ogden, Utah**
(Manufacturers of Weed Process Foundation)

---

## THREE-BAND ITALIANS

Satisfaction Guaranteed

Untested $1.00 each, $10.00 doz., $70.00 per 100
Tested $2.25 each, $24.00 doz.
Breeders $5.00 each.

No more nuclei for sale this season.

**IRISH BROS., DOCTORTOWN, GA.**

---

**HAND-MOORE QUEENS**

How many of you, let me see, have tested out the Hand-Moore bee? Our bees get honey by the ton, and honeys what brings the mon.' So if you want your honest share, and are not content with just the tare. Buy Hand-Moore queens, that's what I say, and do it, yes, and right away.

Untested $1.50 each; 6, $8.00; 12, $15.00.

**W. A. LATSHAW CO.**
CLARION, MICH.

# BOOKS, LABELS, STATIONERY

## TWO NEW BOOKS

**Outapiaries, by M. G. Dadant.** Many valuable hints to the beekeeper who would extend his operations are to be found in this cloth bound book of 125 pages. The author has had a life-time experience in outapiary management. Price $1.00.

**American Honey Plants, by Frank C. Pellett.** The first book in the English Language on the honey plants. Invaluable to the live beekeeper who would make the most of his locality. The important honey sources of each state are listed separately and all treated in alphabetical order. 297 pages, 155 illustrations. Price $2.50.

## OTHER GOOD BEE BOOKS

**Langstroth on the Honeybee, revised by Dadant.** 575 pages, $1.50.

**First Lessons in Beekeeping, by C. P. Dadant.** 167 pages, $1.00.

**1000 Answers to Beekeeping Questions, by C. C. Miller.** $1.25.

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AMERICAN BEE JOURNAL

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# EFFECTIVE INSPECTION

## How Indiana Beekeepers Are Co-operating With the State Inspection Service in the Eradication of Foulbrood

BY FRANK C. PELLETT

THE combination of inspection work with educational service offers the best solution of the disease problem. The writer has long been an advocate of educational methods. It was accordingly a great pleasure to join the automobile tour of the Vigo County Beekeepers' Association the first week in June. The Vigo County fellows are a bunch of live wires. The President, William A. Hunter, was for years a carriage manufacturer, but when he caught the bee fever he got it so bad that he decided to give up manufacturing for honey production. Frank Teel, the Vice President, is a retired banker, who takes beekeeping seriously. The Secretary, Q. O. Rainbolt, is one of the liveliest county agents that the writer has run up against.

Vigo County is liberally sprinkled with both American and European foulbrood. To keep bees on a commercial scale, under such conditions, is a strenuous game, and the local beekeepers are determined to eradicate foulbrood, not only from Vigo County, but from surrounding counties as well. The beekeeping tour is an annual affair and everybody who owns bees is invited—yes, urged—to go along, and the members see that sufficient cars are provided to carry all who wish to go. If bee owners are not sufficiently interested to go, the beekeepers schedule a stop with them, so they can hardly escape actual contact with the enthusiastic bunch. An effort is made to locate every colony of bees in the entire area covered, and to make sure that they are properly kept. The tour extends over four days, and they are mighty busy days, indeed. The entire inspection force, from the State Entomologist's office, was present on this tour, which made fast work possible when an apiary was reached.

Every colony of bees was examined and either treated or marked for later treatment, as circumstances determined. The novice who had never seen bees could get a very good idea of the details of practice during the four days, since every operation, from hiving swarms to treating foulbrood, was demonstrated.

Publicity for the affair was not neglected. Mrs. Ann Bowles Wiley, a reporter for the Terre Haute Tribune, and well-known contributor to other publications, was present on the trip, and a movie operator, Mr. Frank Martin, filmed the principal operations. In case any beekeeper in the territory failed to be present or was not visited on the trip, he will see a glowing account in the papers, or the pictures in the local theatre. If anything was overlooked in the way of bringing the matter to public attention, the writer was unable to discover what it was.

The start was rather dismal, for when the time arrived it was raining as though it would never stop. However, a sufficient number to fill several automobiles gathered at the county agents' office, and after waiting several hours for it to stop, started out in the rain.

The first demonstration was trans-

The movie man was wide awake

ferring bees into a good hive. There was much interest in this operation on the part of the novice and skilled beekeeper alike. Fortunately, by this time, it had stopped raining and the movie man was able to operate his machine while the work was in progress.

Big baskets of lunch were brought out at the noon hour and the contents quickly disposed of. There was too much to be done to permit the waste of much time, and the crowd was off to the next stop. An interesting incident of the first day was the cutting of a bee tree. It was a big sugar maple and the bees were entering at a hollow limb about 30 feet above ground. Men with axes, and later with a cross-cut saw made quick work of felling it. Even the reporter lady gave a hand at the saw. When it was down, a section was cut out and that part occupied by the bees was split open. Although the colony was not large, it was transferred to a hive in the approved manner. Here again the movie man was kept busy, even showing the falling of the big tree.

The reporter lady gives a hand at cutting the tree.

At one well-kept farm, a big lot of good equipment was found and many hives filled with combs, but few bees. The old gentleman who owned them had died, and American foulbrood made short work of the neglected bees. Here the inspectors made a big bonfire, burning the moth-eaten combs and inside fixtures, while disinfecting the hives and such equipment as could safely be saved. It was a splendid object lesson on the effect of disease in the apiary.

Beekeepers visited, who had had only box hives last year, had everything in spick and span order this year, with bees in new hives, nicely painted, and in good show condition. One visit, from a crowd like that, is sufficient to start a fellow to keeping bees right or to get out of the business. Only one man on the whole trip failed to offer a cordial welcome. This fellow swore that the whole crowd was a bunch of crooks, and that he had sold all his bees after last year's visit, just to get rid of them. When asked for an explanation of the trouble which his bees had manifested last year, he said there had been a big fight among the drones, which so reduced the bees that they had not done any good.

Transferring the bees from the tree to the hive

Some whose bees were not in good condition joined the crowd and went out to see both well-kept bees and neglected bees, until they were able to see exactly how they should be kept. A delightful hour was spent at St. Mary's of the Woods. Here a good-sized apiary in charge of a Sister past 70 years of age, was found to be in model order. It was an excellent chance to impress upon the novice how bees should be kept. A large poultry farm, at the same institution, attracted much interest on the part of the visitors.

All told, it was a very successful occasion. Not only did it furnish an opportunity for the members of the association to get together for an outing and talkfest, but it had a most wholesome effect upon the class of beekeepers who are hardest to reach —those who, having a few bees, do not take much interest in them. In some cases, it was very plain that the owners of ill-kept apiaries did not enjoy the visit of such a crowd, nor did they exactly relish the comments on the way things were kept. In one apiary, the bees were found with only one super on each hive, jammed full in nearly every case from tulip poplar, and the bees loafing for lack of room to store the incoming honey from clover. The owner would not admit that it would have paid him to put on more supers, as he had kept bees for forty years with only

The inspectors have a bonfire

one super to each hive. To induce such a man to visit apiaries under similar conditions, to see where two or three supers could be filled at the same time, is very effective argument. Wherever the crowd went, the inspectors examined the bees for disease, and the crowd commented freely upon the care or lack of care manifested in the apiary. If things were not right, there was no lack of forthcoming information to put the owner right.

Considering the changes in the apiaries visited for the first time last season, it is very apparent that after two or three more rounds of the region, there will be none but well-kept apiaries. Some tribes of Indians had no laws punishing crime, but those ignoring the ideals of the tribe were shunned and ignored until they usually committed suicide. Thus does human nature react to public sentiment. The Indiana beekeepers propose to make it so unpopular to keep bees shabbily that their owners will either keep them right or dispose of them. In many cases lack of interest is only because the owners have been too closely occupied with other matters to inform themselves. Such often develop into the most careful and enthusiastic beekeepers.

The inspection, in Indiana, is under direction of the State Entomologist, Frank N. Wallace. There are three inspectors, T. C. Johnson, James E. Starkey and C. O. Yost. The demonstration methods were tried out on a small scale two years ago. Results were so encouraging that more extensive trials were given last year, and this season it is the rule, wherever the local organizations are prepared to give sufficient support.

## BEEKEEPERS' CHAUTAUQUA

The second annual field meeting and Chautauqua for beekeepers will be held at Madison, Wis., August 16 to 21. Dr. Phillips and George S. Demuth will again be present.

So much interest was manifested in this summer school of beekeeping last year that a good attendance should be assured again this season. Prof. H. F. Wilson, of the State University, will be in charge. He writes that they have planted a garden for the beekeepers so that an abundant supply of vegetables will be available to those who wish to camp and cook their own meals. Professor Wilson has worked hard to advance the interests of beekeeping in Wisconsin, and the summer Chautauquas are well worth while. Those desiring more detailed information regarding the program, etc., should address Professor Wilson at Madison.

## BROKEN PACKAGES

By C. A. Ellis

One express man here said to me: "Lots of bees in packages coming now; many of them get out and fly around the room, but none of us get stung."

The point and the pity of this is, "many of them get out."

In a milk sales room, not ten minutes ago, a railway mail clerk told us this: "Just before we left for Boston an expressman threw into our (mail) car a box of bees (he probably thought it was the express car). The box was broken and the bees poured out, hundreds of 'em. We laid low till we got to the middle of the Hudson river, and then, you bet, we kicked that box o' bees into the river." Some beeman's good $5 worth of bees; perhaps a $2.50 queen with 'em.

The point is, the deadly fear of the bees. The light and poorly braced package is another. They should be so strongly braced and nailed that they cannot be broken except with a sledge hammer, and so made that not a bee can sting the hand of the express handlers. Honey comes to me so poorly packed that I'm surprised it is all there.

Albany, N. Y.

These suggestions are good. If the bees are strongly confined, there will be less loss in transit, and less rough handling. Printed directions, in large letters should be pasted on the package. More and more bees are being shipped from one part of the country to the other, and it is necessary to educate those who handle them on the way.—Editor.

Indiana inspection force and officers of the Vigo County Association. Left to right, C. O. Yost, Wm. A. Hunter, Q. O. Rainbolt, James E. Starkey, Frank N. Wallace and T. C. Johnson.

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# THE EDITOR'S VIEWPOINT

## A Starvation Swarm

On page 271 of this number, Rev. A. A. Evans gives a very pretty example of devotion on the part of starving bees, showing them as leaving the hive so that the remainder of the colony might have enough to eat.

We know that bees are devoted, but we have never seen an instance of this kind. Yet, why should it not be so? When caged bees arrive from a long trip, short of food, the queen is usually the last one to die. Evidently she is fed by the others to the last drop. We can understand it, since we see bees feeding their queen constantly, as they meet her, in the hive. Skeptics have doubted the bees' devotion and said that the queen outlived the others because she had more powers of endurance, and not because the bees denied themselves to feed her. But when we see their love for her, and the despair which they show when she is lost, we can understand and appreciate their devotion.

Are bees more devoted to their race than the average human being is to his own? Very probably they are. The example of Captain Oates is as fine an illustration as could be given. But we are likely to be selfish while we accuse others of the same fault. The detested German's "Deutchland uber alles" looks monstrous to us. But pretty soon we are ready to cry "America First" and consider that word as a great evidence of devotion.

We are like the bee in the care for our family or country to the exclusion of all others. They certainly give us fine examples of industry and devotion.

## Bacillus Pluton Versus Bacillus Alvei

The American and European bacteriologists who read the American Bee Journal are requested to take particular note of Dr. White's "Observations on European Foulbrood," concluded in this number. On page 267 (note) Dr. White very plainly advances an explanation of why scientists disagree upon the odor or lack of odor of the so-called European foulbrood. He says: "When the larvæ die Bacillus pluton stops growing, but **Bacillus alvei begins to multiply then** at a very rapid pace and invades the entire larval remains.

In the first installment of his article (July number, page 226), Dr. White wrote: "The name 'stinking foulbrood' has been used in some countries for the disorder in which Bacillus alvei occurs in large numbers, and 'sour brood' for the one in which Streptococcus apis is present in considerable numbers. The writer wishes to suggest that these are two names for one disease and that the disease is the same as the one for which the name European foulbrood is being used in this country." He goes on to explain that the foul odor which some scientists charge to European foulbrood is to be found when Bacillus alvei is contained in the brood in large numbers.

Evidently, if Dr. White is correct, the stinking odor comes from the larvæ which have been invaded by Bacillus alvei, after death, while those dying from Bacillus pluton give but little odor. This explains, until a better explanation comes, why there is a division of opinion as to whether European foulbrood has, or has not, a marked odor, sufficient to stamp it as "stinking foulbrood." We trust our European friends will seize upon this and verify Dr. White's statements. Every day we gain a little towards the truth. When we remember how many centuries passed before man found out that yellow fever was caused by the bite of a mosquito, we need not be astonished at the length of time it takes to decide what is foulbrood.

Mr. C. P. Dadant,
Hamilton, Ill.

Dear Mr. Dadant:

I wish to say that the manner in which the European foulbrood article is printed is very pleasing. The illustrations have been printed very well. A few typographical errors are noted. Most of these were made by our typist here and overlooked by me when I read the copy. Thinking you might wish to mention some of these at the close of the article, possibly, I am referring to them at this time.

**Errata**

Page 226, column 2, line 40, for "afterwards" read "after death."

Page 227, column 1, line 6, for "those" read "these."

Page 227, column 1, line 33, for "arena" read "area."

Page 227, column 3, line 5, for "germs" read "queens."

Page 227, in legend to Fig. 5, line 3, for "O" read "Q."

The most important error, of course, is the 4th one mentioned, the others being minor ones and probably are not worthy of mentioning.

Very sincerely,
G. F. WHITE.

## Georgia Beekeepers Meet

A drive for the passage and enforcement of a bee disease inspection law was begun by the beekeepers of Georgia at Waycross, Saturday, July 3, when a committee was named to appear before the present session of the Legislature in that State and ask for a law and an appropriation for its regulations.

J. J. Wilder, of Waycross, was named President of the Georgia Beekeepers' Association at a meeting held the same day, attended by 75 beekeepers from throughout the State. After a talk on the advantages of organization and of having apiary inspection service, given by Kennith Hawkins, of the G. B. Lewis Company, the organization was effected. Vice Presidents who were named are: John W. Cash, Bogart; W. C. Barnard, Glenville; A. B. Crenshaw, Pavo; W. H. Young, Bainbridge, and W. L. Wilder, of Macon, each being chosen from a different part of the State to facilitate State-wide organization. The Secretary is Mrs. Madge Merritt, of Brunswick, and the Treasurer is C. H. Herndon, of Waycross.

N. L. Stapleton, of Colquitt, together with President J. J. Wilder, heads the delegation chosen to present the claims of the Association to the Legislature. An attorney pledged himself to prepare their bill and arrangements have been made to have the bill introduced both in the House and Senate. It will be practically a duplicate of the Florida apiary inspection law and will be enforced by the State Entomologist

American foulbrood has made its appearance in serious infections in northern Georgia near the South Carolina line among some of the best apiaries of the State, and is believed to have been introduced through shipments of nuclei to Georgia from States north. Great confidence was shown in Mr. Wilder, who entertained the visitors at his factory, where dinner was served to all who attended, Mr. Wilder being assisted by his factory workers. The meeting lasted from 10 o'clock in the morning until 6 o'clock at night, and interest never flagged during the entire time. Beekeepers numbering about 20 from various parts of the State were called upon to express their opinion of beekeeping possibilities and methods in various parts of the State. The ownership or control of over 50,000 colonies of bees was represented by the men and women who attended this session.

### A Comb of Healthy Brood

Our cover page gives a reproduction of a photo published in October, 1910, on the cover page of this magazine. It was furnished by Mr. Lyman, of Downer's Grove, and can give the beginner a very good idea of healthy brood in all stages. Notice the larvæ coiled at the bottom of the cells, in the center bottom of the picture. Swammerdam compared them to "a dog when going to sleep." In the center of the picture, eggs may be noticed. Near the top, cells containing pollen are shown. The top of the comb shows sealed honey.

No favorable comments may be made about the regularity in the brood in this photo, but it would be impossible to show the different stages in a comb that was filled regularly, by the queen, as the brood would then be almost all of the same age. The variety is here, and the only parts that do not show plainly are the cells, at the edges, which are slightly out of focus.

### Florida Beekeeping Course

A course in beekeeping is being given at the University of Florida, at Gainesville. Dr. Frank Stirling, the instructor, reports that "more interest is being shown in this course than in most others." There are 40 students.

The State Plant Board, with headquarters at Gainesville, is in charge of the bee disease law. Correspondence on this matter should be addressed to the "Plant Commissioner" at Gainesville.

### Color of Queens

"The color of the queen has no connection with the color of the workers, for there are golden queens which produce dark workers and dark queens which produce very light workers."—(A. Zanini, in the Bee World.) We concur in this statement, although by long protracted selection bright queens producing bright workers are finally secured. When we mentioned to Doolittle that the color of the queen had no importance whatever, he replied: "You like to look at a pretty girl, why not at a pretty queen?"—Editor.

### Beekeeping Near Vladivostok

We are in receipt of the following information on beekeeping, in the Valley of the Usuri River, which flows into the Japan Sea at Vladivostok, by a Hungarian officer, who is now a prisoner of war in the Japanese camp at Pervaya-Rietchka, near Vladivostok, Manchuria:

"In gathering information about the conditions of beekeeping at this place and along the Usuri River, I learned that the Langstroth system is widely spread; the hives in use are known as Dadant hives, and alternately I have also found some built on the advice of Dr. C. C. Miller, both with 10 and 14 frames. The bees are harvesting honey from white clover (May 29) which is abundant here. The average production of extracted honey per colony varies from 100 to 150 pounds, though the eason of pasturage is very short, lasting from May to the end of September. The climate, in spring, near the seacoast at Vladivostok, is very unfavorable to the bees. Since the beginning of the two months of my sojourn here, there was scarcely a day without fog, and every other day we are waiting for fine weather."

WILLIAM SLOVIG.

### Death of an Italian Apiarist

Dr. Emilio Triaca, whom we met in 1913, at Milan, and who was one of the founders of the Italian Association of Beekeepers, and its Vice President, died at his home, Villa La Calma, near the Lake of Como. He had served as Lieutenant in the Italian army, in the fifties, during the war which liberated the Province of Milan. He was then wounded in the left leg and was a cripple ever after. He held a number of positions of trust in Milan, and was decorated with the medal of military valor. He was 77 years old.

Dr. Triaca was one of the finest and most progressive men among the leading apiarists of Italy. He is regretted by all who knew him.

### How Many Eggs May be Laid in Twenty-One Days?

In the question department, the reader will find a reply by Dr. Miller, giving an estimate of the number of eggs a queen may be able to lay in the 21 days which are required for the egg to hatch into a worker bee.

In a private note, Dr. Miller mentions the low estimates of old-time writers on this question, the maximum, given by Donhoff, being 63,000 instead of Dr. Miller's 92,800. It is interesting to read ancient authors on this point; but one must remember that their hives were usually altogether too small for a full test. Hamet, one of the authorities of the middle of the last century, asserts that the queen lays an average of 40,000 to 100,000 eggs **a year.** That is far from our estimates. It is true that he adds that some queens may lay as many as 200.000 to 500,000 in a year. But he tells us also that "during the active laying, she lays eggs from morning till night without interruption." At the rate of 6 eggs per minute, which has often been witnessed, a 14-hour day would give us 5,040 eggs. A 10-hour day would produce 3.600 eggs. But why should we think that she lays only in the day time? Is it not because we have watched her only during the day? The A B C tells us, of a prolific queen, that she "is on the job night and day."

The older writers were still less ambitious than Hamet, as to the fertility of the queen. Wildman, quoting Reaumur, states that **"she may lay 200 eggs in a day."** That would make only 4,200 eggs in 21 days. Colin was a little more liberal, estimating the number of eggs a queen could lay at "not less than 400 to 600 per day." He used very small hives.

Alley wrote that "a queen that will not lay 1,200 eggs in 24 hours is not worth preserving." That is a little better than the old views. But it does not come up to Doolittle, who wrote that he had queens that laid 5,000 eggs for weeks in succession. His description of a "really good queen" was "one that will give us from 3,000 to 4,000 workers every day for a month, previous to the honey harvest. (Scientific Queen-Rearing, page 13). The expressed opinion of this leader among queen-breeders and honey-producers was quite in accord with the experience of Charles Dadant, who found many queens, in actual practice, with large hives, to occupy at least 73,500 cells with brood in 21 days, previous to the honey crop.

### Winter Experiments

Reports from beekeepers of great experience, in northern New York, indicate that there is still much to learn in the matter of wintering, in localities where the confinement of the bees is long protracted.

A firm of experienced men, having 419 colonies, wintered in cellars and out-of-doors, both heavily and lightly packed, secured the following results:

| | |
|---|---|
| No. of colonies in fall | 419 |
| Loss | 163 |
| Per cent, 39. | |
| Wintered in cellars | 165 |
| Loss | 56 |
| Per cent ,34 | |
| Wintered with heavy packing | 33 |
| Loss | 8 |
| Per cent, 24. | |
| Wintered with packing on top and sides only | 221 |
| Loss | 99 |
| Per cent, 45. | |

The percentage of loss is great in every case, but largest in the slightly sheltered colonies. Most probably the low quality of the food was the greatest cause of loss, since the colonies were strong at the beginning of winter.

Moral: Let us make sure of stores of high quality before winter.

### A Live Organization

We have been favored with a copy of the report of the Aberdeenshire and Kincardineshire Beekeepers' Association for 1919. Judging from this report there must be a very great interest in beekeeping in that part of Scotland. A total of 1,391 members is shown for 1919, and we are informed by letter that the number has already increased to nearly 1,700.

The association has seven touring experts who go about the country assisting beekeepers with their problems. We infer that the touring expert employed by the association works very much like our extension men employed by the Government. The report contains something over 65 pages and contains, besides the names and addresses of members, the reports of the experts, rules and schedules of prizes for the honey show, by-laws of the organization, catalog of books in the library, etc.

# Some Observations on European Foulbrood

By G. F. White, Bureau of Entomology, U. S. Dept. Agr., Washington, D. C.

(Concluded from July)

### Length of Time the Germ Lives

The germ **Bacillus pluton** grows and multiplies probably only in the stomach of infected bee larvæ, and very little, if any, after the larva dies. Sooner or later, however, it dies if it is not fed again to healthy larvæ. Many experiments were made relative to the amount of heat, drying, sun light, fermentation, putrefaction and carbolic acid the germ will withstand. The periods it will live in honey, pollen, and in decaying larvæ were also subjects for study. In performing the experiments, disease material containing the germ was subjected to these various environments, respectively, and then was fed to healthy brood to determine when the germs were destroyed.

The approximate period the germ of European foulbrood will remain alive in various environments may be estimated from the following results:

When the germ was placed in water and heated for 10 minutes it required 146 degrees F. to destroy it.

When it was heated in honey for 10 minutes it required 175 degrees F. to destroy it.

The stomach contents of diseased larvæ were smeared on glass slides and allowed to dry. When these were shielded from the light the germ lived about a year.

When similar smears were exposed to the rays of the sun the germ was destroyed in about 3 hours.

When placed in water it was destroyed by the sun in about 6 hours.

When in honey the sun destroyed it in about 4 hours.

It was destroyed in a 10 per cent sugar solution fermenting at room temperature within 3 weeks.

It was still alive after one month in a 20 per cent honey solution fermenting at outdoor temperature.

In a putrefying solution at room temperature it was destroyed in about 35 days.

In a similar solution at outdoor temperature it was still alive after 40 days. The time required to destroy it was not determined.

Placed in honey and kept at room temperature the germ died in from 3 to 7 months.

Mixed with pollen, the germ lived for more than 7 months at room temperature. The maximum period has not been determined.

The germ lives for a number of days in a half per cent aqueous solution of carbolic acid, but is killed rather quickly by strengths ordinarily used as a disinfectant.

Other things being equal, the germs live longer in a cool environment than in a warm one.

It will be observed from these facts that the germ of European foulbrood lives only about a year under quite favorable environment; that it is readily destroyed by a number of factors in nature, and by heat and disinfectants.

### Spread of European Foulbrood

The discussion of the transmission of any bee disease may be considered under three subdvisions—the spread (1) from diseased larvæ to healthy ones within the same colony. (2)from a diseased colony to a healthy one within the same apiary and (3) from a diseased apiary to a healthy one.

Naturally the germ **Bacillus pluton** must be present in a colony or there can be no European foulbrood in it. The spread of the disease, therefore, involves directly the spread of the germ that causes it. The infected larva is the source for the multiplication of the germ and the adult bees have a tendency to remove these larvæ piecemeal, thus removing the germs. If the disease material is fed to healthy larvæ before the germ dies, the disease will be transmitted; if, on the other hand, it does not reach the stomach of such larvæ before the germ dies, naturally the disease will not be spread. These facts form a good starting point in a consideration of the problem of the spread of the disease.

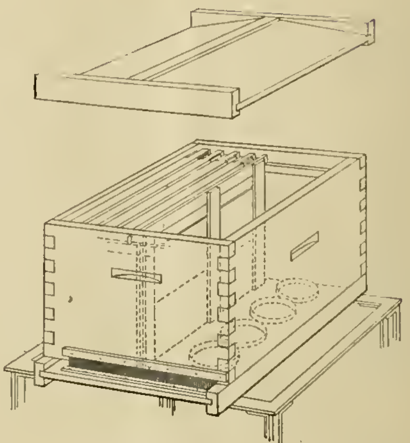

Fig. 6. Hive for experimental colony

Fig. 7. Experimental apiary for study of bee diseases

Were it possible to trace completely the course of the fragments of larvæ removed, until the disease-producing germ **Bacillus pluton** which they contain was dead, one could describe in considerable detail the mode of transmission of the disease. While to do this is well nigh impossible, much has been done in a more indirect way toward the solution of the problem.

As a result of the removal of the sick and dead larvæ by the adult bees, European foulbrood colonies were found to manifest a marked tendency to recover from the disease. The fragments of larvæ removed are not fed, as a rule, therefore, directly to the brood. Were they stored with the honey, so they would not reach the young feeding brood for a few months, no disease would result, since the germ dies comparatively soon when it is in honey.

Inasmuch as **Bacillus pluton** may remain alive for a considerable period in the scales, it seems quite probable that through them the disease might be carried over a period of months and possibly, at times, over winter. The pollen in European foulbrood colonies might possibly also be a source of infection for a considerable period.

Once carried out of the hive and released from the bees, the germs encounter various agents which tend to destroy them, as drying, sunlight and fermentation. The chance that such germs while alive will be taken up by adult bees and fed to healthy brood,

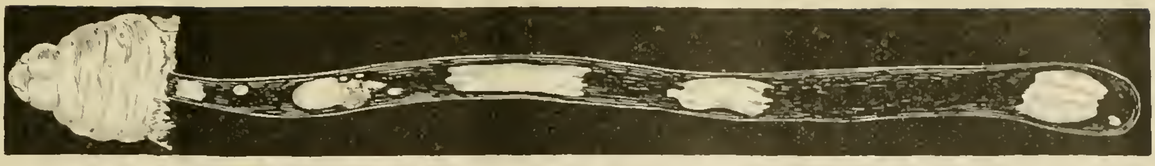

Fig. 9. Stomach contents removed from larva sick of European foulbrood

indeed is comparatively slight. Should they get into the water supply of the bees a possible means for the transmission of the disease would be supplied. The chances would be increased if the body of water is near the apiary, and is a slowly changing one. A colony being weakened by disease becomes a prey for robbers, and at once becomes the source of infection for other colonies of the apiary, and at times, also, for other apiaries. The likelihood of the disease being transmitted by extracted honey has been overestimated at times.

Brood-combs containing brood dead of European foulbrood will transmit the disease by being placed in a healthy colony after being stored over winter at room temperature. The maximum period they will do so has not been determined. Hives that have housed European foulbrood colonies do not seem to be a likely source of infection. Hive tools and the hands or clothing of the apiarist are not to be feared as sources of infection.

Since all of the colonies of the experimental apiary were in the open, the bees having free access to flight, and no spread of the disease from colony to colony was observed, it is evident that the flowers visited by bees from diseased colonies and afterward by those from healthy ones are not a fruitful source of infection. The observation serves to show also that the water supply (no slowly changing body of water was near by) of the bees did not endanger the healthy colonies of the apiary. Since there was no spread of the disease observed, a drifting of bees or the wandering of drones as might have have occurred did not result in any appreciable infection. The observations made during the experiments do not indicate that the disease is likely to be transmitted through the medium of queens.

### Diagnosis of European Foulbrood

The death of brood in uncapped cells, the yellow color of larvæ recently dead, the brownish hue of those longer dead, the irregularity of the brood and the absence of the foulbrood odor are symptoms of European foulbrood by which the beekeeper, after a little experience, can diagnose readily, and at the apiary, most cases of the disease.

Both late and early in the course of the disease, however, the diagnosis is frequently not so easy. Late in the disease the bees may have removed most or all of the dead larvæ from the uncapped cells and some of those from the capped ones, leaving only the larger scales that occupy the endwise position in the cell. The number of such scales in a given area of brood-comb, however, is small. While these scales resemble individually those of American foulbrood, they are fewer in number, and when dry are more easily removed. When dry, also, they are more rubberlike* in consistency than are those of the ropy disease. From the gross appearance alone the diagnosis can frequently be made of these cases. In the laboratory it can always be made readily and easily from a suitable sample.†

In European foulbrood a larva, before it dies, manifests symptoms by which an early diagnosis may be made.‡ A pronounced wavelike movement of larvæ strongly suggests the presence of the disease. A yellowish white mass seen through the narrow transparent area (Fig. 5, K) along the median dorsal portion of the body of the larva furnishes positive evidence of European foulbrood (Fig. 5, L). This mass is within the stomach and is made up chiefly of a bacterial growth composed largely of **Bacillus pluton.**

A very satisfactory test and one which may be applied even as early as two days after infection takes place, consists in removing the contents from the stomach of a suspected larva. The larva is removed from the brood-comb and is torn across near the head end, leaving only the contents of the stomach, which tears less easily. By separating the two portions of the larva the stomach contents will be pulled out of the posterior portion and be attached to the anterior one (Fig. 9). The stomach mass is broken into fragments by the slight force necessary to remove it.

### Conclusions

European foulbrood is the disease of bees that causes the death of the brood during its uncapped stage.

It occurs in many parts of the United States and at least in Canada, Denmark, England, Germany and Switzerland.

It is frequently referred to by the general terms of "foulbrood." In this country it was called "black brood" for a while. That "stinking foulbrood" and "sour brood" are also names for this disease is the opinion of the writer.

The occurrence of the disease cannot be attributed altogether to the climate or food of the locality. The season of the year and the quantity of food are, however, factors which determine to a certain extent the course of the disease in the colony.

The disease is infectious and is caused by a germ named **Bacillus pluton.**

The worker, drone and queen larvæ are all susceptible to infection, but the adult bees are not.

The germs reach the stomach of the larvæ with the food. In the stomach they multiply rapidly and during the third day of the infection symptoms of the disease appear. Death takes place frequently by the end of the third day.

The sick and dead larvæ naturally contain the germs of the disease. There is a strong tendency on the part of adult bees to remove these larvæ. This is done in a piecemeal fashion and the spread of the disease

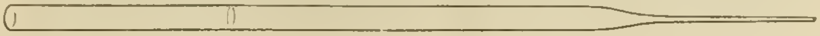

Fig. 8. Glass tube for inoculating larvæ by the direct method

in nature is determined largely by the disposition made of the fragments removed.

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* The word "rubberlike," used in this connection does not imply that the scales can be stretched like a rubber band, but simply that when dry they are less brittle than those of American foulbrood. The scales of both diseases when in a moist environment (a sample enclosed in a tight box, much moisture within the hive, or even on a very damp day) take up moisture readily and become soft. Under such circumstances, therefore, neither the term "rubberlike" nor "brittle" would be applicable for the scales of either disease.

† McCray and White. The diagnosis of bee diseases by laboratory methods. U. S. Dept. Agr., Bur. Ent. June 21, 1918.

The diagnosis of European foulbrood in the laboratory from samples received from beekeepers is usually made, or is at least confirmed, by finding *Bacillus alvei* in the dead brood. This procedure has been adopted because *Bacillus alvei* is readily recognized in making an examination of the samples, while *Bacillus pluton* is not, and the method is made possible from the fact that *Bacillus alvei* rarely occurs in other bee diseases, and when encountered in them is found in very small numbers only. The diagnosis in experimental studies, on the other hand, is made, as a rule, from the presence of *Bacillus pluton* in the living but sick larvæ. A few facts in connection with the disease make this difference in methods readily understood.

*Bacillus pluton*, the cause of European foulbrood, is present in large numbers in the stomachs of larvæ sick but not yet dead of the disease, while *Bacillus alvei*, if present at all, occurs then in small numbers only. In experimental studies an early diagnosis is especially desired. Sick larvæ, rather than dead ones, are used and *Bacillus pluton* is naturally the germ that is looked for.

As the brood in samples received from the beekeepers usually dies before reaching the laboratory, naturally the diagnosis from such samples must be made from dead larvæ. The bacterial finding in the dead larvæ is usually quite different from that of the sick ones. When the larvæ die *Bacillus pluton* stops growing, but *Bacillus alvei* begins to multiply then at a very rapid pace and invades the entire larval remains. Upon examining such larvæ, therefore, *Bacillus alvei* is encountered in very large numbers, while *Bacillus pluton*, in comparison, is present in small numbers only. While all larvæ dead of European foulbrood do not contain *Bacillus alvei*, the brownish and somewhat viscid ones, the scales resulting from them, and especially the remains and scales (Fig. 5, O, R, T) of the older larvæ usually contain this bacillus in very large numbers. In making diagnoses such remains are looked for.

‡ White. Circular 157, U. S. Dept. Agr., Bur. Ent. 1912.

The germ that causes European foulbrood lives longer than either the one that causes Nosema-disease or the virus that causes sacbrood, but not nearly so long as the one that causes American foulbrood.

The disease may be present in a number of colonies of the apiary and not be transmitted to the others.

Hives which have housed European foulbrood colonies are not a fruitful source for the spread of the disease. Flaming them, while probably often unnecessary, will surely remove all possible danger. The hands and clothing of the beekeeper and the smoker and other tools used about the apiary are not likely means for the spread of the disease.

The transmission of the disease by way of flowers is not to be feared.

Experimental evidence indicates that if European foulbrood is ever spread through the medium of queens, drones or drifting bees the method is not the usual one.

Theoretically, the water supply of the bees, if it is near an apiary containing one or more diseased colonies and is a slowly changing one, might possibly become at times a source of infection to other colonies of the apiary, but whether the disease is ever spread in this way has not yet been determined.

Theoretically, also, under favorable conditions, robbing from bee equipment used about an infected apiary might spread the disease.

The spread of the disease in nature, it would seem, takes place chiefly as the result of robbing from diseased colonies.

The placing of brood-combs from diseased colonies into healthy ones will spread the disease.

Anyone, after having had a little experience with European foulbrood, can diagnose most cases of the disease very readily at the apiary. In the laboratory all cases can be diagnosed from suitable samples by bacteriological methods.

The tendency for the colony to recover from the disease is greater in European foulbrood than in American foulbrood, but is less than it is in sacbrood or Nosema-disease.

Considered from the technical viewpoint, much has yet to be found out about European foulbrood. For practical purposes, however, it can be said that sufficient information has been gained to make it possible for the beekeeper to devise a treatment for the disease which will be logical, efficient and at the same time economical.

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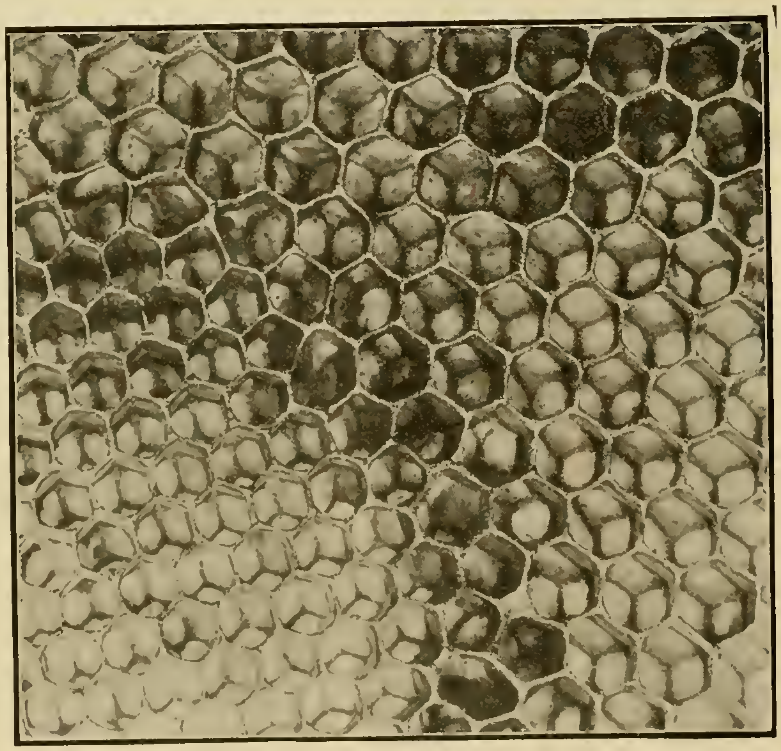
## LATE FEEDING CAUSING DYSENTERY AMONG THE BEES

By Kennith Hawkins

So much has been written pro and con concerning the trouble which may be caused by feeding liquid food to bees, either late in the fall or during the winter, that the following experiment may be of interest to beekeepers.

One colony of bees which was normal in every respect, was set aside here in Wisconsin, after all the available sources of nectar had been destroyed by frost. This colony of bees was shaken off the frames on which it was clustered and placed in a hive containing empty drawn combs. This was accomplished in the heat of the day when it was not particularly dangerous to the colony because of low temperature, and was at a time when there was no longer any brood in the hive, about October 1. The bees were placed in a hive with glass sides and the hive located in a building where they were kept in a temperature never less than 60 degrees F., but with an entrance leading directly out doors, facing west. The size of the entrance was about 4 inches wide and a beespace high. The colony was immediately fed with a sugar syrup of two parts pure cane granulated sugar to one of water, by means of a pepper-box style feeder. The bees took the food readily and stored it in their combs, but owing to the low temperatures at night, were able to seal very little of the syrup.



Drone comb built next to worker combs, showing accommodation cells. (Enlarged).

By October 25, during rainy, cold weather, with a temperature during the day of 40 degrees F., the colony was clustered quite compactly, and the activity of the bees was quite noticeable within the cluster, which was up against the glass hive side. They were again fed and were able to take some of the food down directly above the cluster.

By November 11, in cloudy, cold weather, with the temperature at 39 degrees F., the bees were again fed and were able to take down some of the syrup, although the disturbance of placing on the feeder partly broke up the cluster which the bees had formed. They were again fed November 16, with the temperature at 32 degrees F., and again partly broke cluster when fed.

By November 19, when no more feeding had been done, the bees had been forced to change their position on the combs because the sugar syrup supply within their cluster was exhausted. The effects of feeding syrup when the bees had no full flights was noticeable, as the abdomens of the individual bees became distended and shiny and the activity of the colony within the cluster was erratic and at times greatly increased.

When observed November 27, on a cloudy day, with the temperature at 17 degrees F., the activity of the cluster was very erratic and it was noticed that the queen had begun to lay eggs. A number of the bees had died and fallen to the bottom-board of the hive. Each had a shiny, greatly distended abdomen, and some were able to crawl out of the hive to die. The supply of syrup was adequate, but the bees did not seem to be consuming quite so much.

Observations made December 12 showed that none of the brood which had been started had been capped and that it seemed to die from lack of heat, as there were now nearly two inches of dead bees on the floor of the hive, and no more eggs noticed.

Within a day or two after this, when the colony was examined by looking through the glass hive sides again, it seemed as though the disturbance caused a sort of explosion within the hive and the cluster of bees broke. Bees crawled in every direction within the hive, some dropping, and some voiding excrement and dropping afterward. In a few hours all the bees were dead or dying on the hive bottom. The temperature outdoors at this time was about 25 degrees F. At no time since the bees were first fed sugar syrup did they have a flight, to the knowledge of the writer. At the time the bees died there was still a considerable quantity of sugar syrup in the frames.

Moral: Feed early.

Watertown, Wis.

(This experiment confirms previous tests. When it is necessary to feed the bees late in the fall or during the winter, at a time when they cannot take flights occasionally, the only safe food is candy, placed over the combs, above the cluster.—Editor).

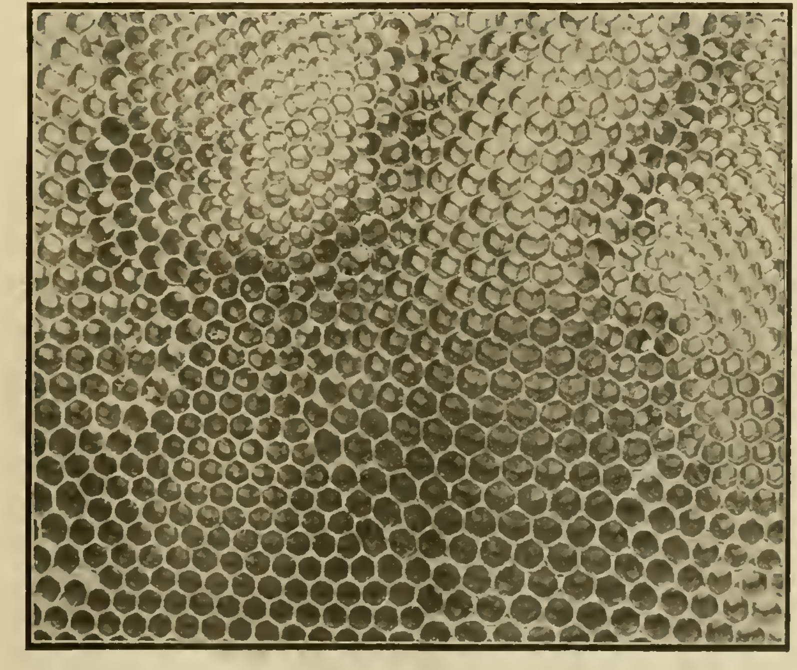
## MIGRATORY BEEKEEPING

By C. I. Graham

I shipped my first car of bees in 1891, from Santa Ana, Orange County, to Newhall, Los Angeles County. 1891 and 1892 were off seasons. I fed heavy and lost 50 per cent from starvation. In 1893 I produced 300 pounds per colony in May and June, from black sage, in Mint and Bouguet Canyons, in Los Angeles County. In July moved by team 40 miles to Pondale, producing 20 pounds per colony from desert blue sage. In August moved twenty miles, 3,000 feet elevation, to Gorman Station, and produced 35 pounds per colony from wild buckwheat, the big red variety. 1894 and '95 were off seasons in those locations. I was compelled to move back to Los Angeles County, and Ventura County bean fields, to carry my colonies over. In 1896 I moved by team 90 miles, to Kern County, Tehachapi Mountains, 5,000 feet elevation; produced 52 pounds per colony, honey from mountain salt Sage, and delivered a car load of honey 50 miles to Mojave. I made my own road through Mojave Desert. In 1897 shipped back to L. A. Co., to Mint and Bouquet Canyon, salt belt, and produced 26 pounds per colony from black sage. In 1898 moved by team 30 miles to Bakersfield, Kern County, in June; produced 65 pounds per colony. In 1900 made four different crops by four shipments; first crop Los Banos, Merced County Spring flower belt, 20 pounds per colony, in February and March; second crop shipped to San Luis Obispo, Monterey County, sage belt, produced 8 pounds per colony in May and June. Third crop shipped back to San Joaquin and Sacramento Valleys; produced 40 pounds per colony from alfalfa and weeds in July and August. In September shipped to Merced, Madera and Fresno Counties to jackass clover belt; produced 70 pounds per colony; finished extracting on Christmas day, and shipped to Tulare County, orange belt for the winter. I shipped 14 cars for the season. In 1905 I shipped from Davis, Yolo County, almond belt to Saugus, L. A. Co., sage belt, producing 300 pounds per colony in May and June from black sage. In July shipped to Raisin City and Courthers, Fresno County, jackass clover belt, securing 30 pounds per colony. The crop was 240,000 pounds of honey, 2,000 pounds of wax. This crop was handled by myself and one helper from the first of February to the first of November. One extreme follows another in California. In 1906 I shipped all my bees four times before I produced honey to carry them over the winter. I shipped 20 cars for the season, including two cars to Carson City, Nevada. I hauled them by team 50 miles to Topaz, Mono County, Calif. My traveling for the season was five 3,000-mile books. My system is to double back two or three times before shipping to new locations, to make sure conditions are developing O. K.. Then a hot wave may kill and destroy the plants shipped to. In 1910 I produced 60 pounds of orange honey per colony at Exeter and Lemon Cove, Tulare County. In April I shipped to Reno, Truckee Meadows, Nevada. The 9th of May produced 200 pounds per colony from white clover, sweet clover and alfalfa. There was a steady flow from the 19th of May to the 15th day of September. In 1915 I produced 105 pounds of orange honey per colony in April at Porterville and Xante, Tulare County, then shipped to Reno and produced 60 pounds per colony balance of season. In 1919 my bees built up in the almond belt at Durham, Butte County, in February and March, then produced a little surplus from one-third of the colonies, mated 50 per cent of queens, then shipped to Oroville, Butte County, orange belt, in April, and produced 18 pounds per colony. In May I shipped to Yolo County reclaimed lands, domestic seed belt, and produced 60 pounds per colony from onions and carrots in May and June. In July the bees were shipped to star thistle belt, Colusa County, where they produced 120 pounds per colony, and tripled the number of colonies. One of these car loads of colonies passed eight health certificates during the season. During the season of 1919 I eradicated 15 cases of American foulbrood, 7 cases in one car, 8 in the other, and I realized how and where I picked it up. In 1918 I was located 2 miles from a careless beekeeper, who cleaned up his American foulbrood in the day time. Fifty per cent of his bees were affected. I had 600 colonies in this location. In 1918 I eradicated 12 cases of American foulbrood in one car, no disease in the other. Both carloads passed 2 health certificates during the season.

Now, who is most apt to spread disease, the migratory or the stationary beekeepers, even under our present county laws? In the yellow star thistle belt, in Sacramento Valley, 1903, I produced 68 pounds per colony, thistle honey, at Grimes, Colusa County. In 1908, 40 pounds per colony, Chico, Butte County. 1912, 32 pounds at Vina, Tehama County, 1917 45 pounds at Tehama, Tehama County and 1919, 120 pounds per colony at Princeton, Colusa County. In 1903 this thistle was unknown to beekeepers in California, excepting only three small belts to my knowledge, one at Grimes, Colusa County; one at Cottonwood, Shasta County, and one at Tehama, Tehama County. Now it has become a pest to farmers. No limit—an area, 100 miles in length, from one to fifty miles in width.

Allow me to state the opportunities and advantages have advanced 90 per cent in the past 20 years as to quantity of honey plants and extensive fields, although there is 90 per cent more diseases than 20 years ago in California and Nevada. In shipping 170 cars of bees I have lost 3 carloads; first car 544 colonies, shipped from San Luis Obispo, Monterey County, to Knights Landing, Yolo County, July 10, 1900. The car was spotted on team track at noon, unable



Comb built without foundation, showing both drone and worker cells arranged in irregular manner to unload with teams at 6 p. m., the whole car load suffocated at once; in other words, in a very few minutes. Second car, 320 colonies, billed from Gypsum, Orange County, to Yarington, Nevada, by the Santa Fe R. R. They held the bees up at Bakersfield all day the 21st of July, 1911, thermometer 110, waiting for certain tonnage before moving the train. At 4 p. m. the whole car load suffocated with my complete shipping equipment attached to all colonies. Standing in one place was the cause of suffocation. Had those colonies been kept in transit, moving along to destination, unloaded at once and released, I would have saved the bees. The third car, 319 colonies in car, 245 lost; shipped from Roscoe to Tehama, July 3, 1917. The car was left where I could not unload the colonies from 8 p. m. to 8 a. m.. The delay and confinement in car was the cause of loss. After a car of bees has been in transit to their limit and stop, the colonies should be unloaded at once and released.

In February, 1902, I lost 1,200 colonies by flood water in the Sacramento Valley. On May 28, 1909, at Lindsay, Tulare County, Calif., orange belt, my migratory beekeeping came to a sudden stand. By misfortune I burst a blood vessel, developing into a stroke of paralysis. I have all my records since 1886 to the present day, from San Diego County to Modoc County, Calif., from Reno to Wells, Nevada. I have explored nine of the western bee States, Old Mexico and Argentine Republic, all for the love of the dear little industrious honeybee.

## THE DISMAL SWAMP

By John J. Lewis

Under the heading "The Dismal Swamp for Beekeeping" you ask for information. I used to keep a yard of Italians on the northeastern edge of the swamp, at Magnolia, Va. There is an almost uninterrupted period of blooming of what are listed as honey plants from early spring to late fall, but in that region many plants listed as honey producers do not yield nectar, for instance, although sweet bay is most plentiful, I never saw a bee on the blossom. Red maple blooms in January or February when the weather is too cool to yield much. Yellow jessamine does not yield and the gums, although covering most of the swamp, do not yield much. I think it is too far north for them to yield well. Tulip poplar also is not much of a yielder. Rattan is in the shade too much for the bees to get to it. Cotton does not yield either. Water ash yields well, but is not common enough to amount to much. The colonies gain 5 to 10 pounds while it is in bloom. The surplus is all from May 1 to June 15, from blackberry, holly, crimson clover and persimmon. Something gives the honey a bitter taste and amber color. I always thought it was from holly. Mr. Geo. Rea said that, farther in the swamp, where Root tried wintering bees for early spring shipments, the honey did not have the bitter taste, although there is holly there. The only advantage I could see in keeping bees at Dismal Swamp is for early queens or early pound packages of bees, and that is questionable. Bees need winter protection, as it goes considerably below freezing at times. As they are active all winter, rarely over a week passing without their flying, they consume an enormous amount of honey in winter. A 10-frame Langstroth does not hold enough honey for a strong colony to come through to clover, and must be fed in spring. I used to have a botanical survey of the Dismal Swamp, but cannot find it at present. I would not advise anyone to go there to keep bees for honey production, and neither for package bees. European foulbrood is also there. Paralysis and pickle-brood are prevalent, probably on account of the damp climate.

The surplus per colony is less than in the North, and bees require a great deal more care.

I am not a novice, although I don't claim to be a professional beekeeper. What I have just given you is not guess work, but observation.

Last, but not least, don't forget malaria and mosquitoes. I used to take my quinine regularly.

List of honey plants to which my bees had access from one-half to one mile:

Soft maple very plentiful last of January to late in February; valuable for early brood-rearing.

Fruit bloom not very plentiful; valuable for brood-rearing. (April).

Crimson clover, May 1 to 14; several fields; good yielder (surplus).

Persimmon, few trees; good yielder, but not enough trees to amount to much.

Blackberry, May 10 to 30; best honey plant; quite plentiful (surplus).

Holly, May 20 to June 10; plentiful, good yielder (surplus).

Black and cotton gum, very plentiful in May; some honey.

Tulip poplar, plentiful; never saw any amount of bees on it.

Cotton, after July 4, very plentiful; does not yield honey.

Sumac (mountain), plentiful.

Partridge pea.

Gallberry, some in June, some honey.

White alder, some; no honey.

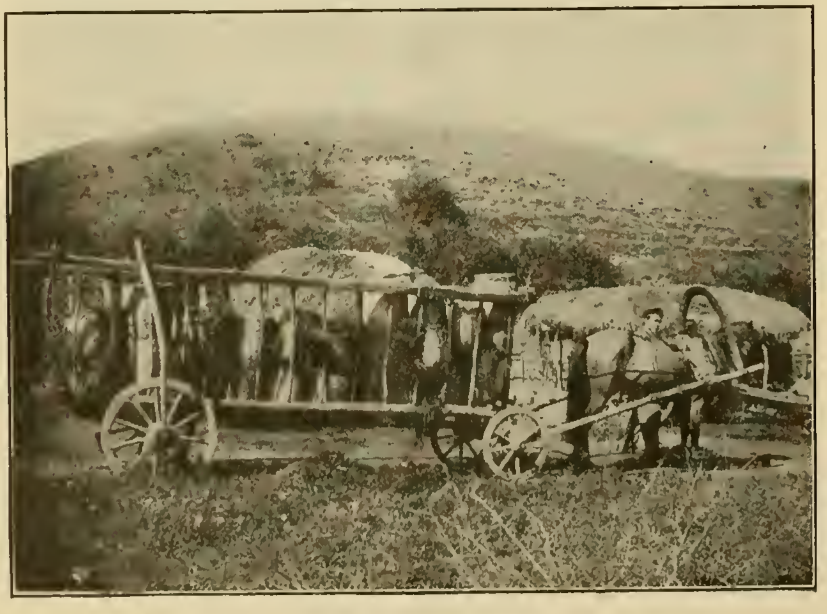
Ash, September, some; some honey.

Goldenrod, September; very plentiful; yields some nectar.

Aster, October, very plentiful; yields some honey.

Bay, in June; very plentiful; yields nothing.

New York.



Moving in Tersk District, Caucasus. Cylindrical wicker hives

## MOVING BEES TO A NEW SPOT

By E. P. Stiles

Last year, about the middle of the horsemint honey flow, or a little later, I moved my little apiary to this point, in Central Texas, from the coast. Considerations other than bee welfare caused my removal from the coast, but in moving at that time I expected to get a larger share of the horsemint crop and to get in addition, later, the mesquite and sumac crops, and enough bitter honey to winter the bees on. Much too much to expect of this locality.

Previous to moving those colonies here they had been used all spring for rearing and testing queens and furnishing bees for pound packages; consequently they were much run down. The confinement to the hive and enforced idleness during the journey of about 200 miles and, possibly, change of climate—from sea level to 500 feet, from moist to dry atmosphere—seemed to invigorate them.

Owing to the expense of expressing the equipment of the yard, all material, except the hive bodies containing the bees, was shipped by freight, and this was much longer on the road than was expected. During this time the bees were without hive-tops or bottoms. Upon their arrival, the bees were moved to the new yard, the ground where the hives were to stand, raked smooth, the screens taken from the bottom and the bodies set on the bare ground. The screens on top were covered with tarred felt and on that earth heaped. That same night a heavy rain storm ensued, but the soil being porous, the location a hillside, and the ground very dry, no harm was done. The bees went immediately to work, and during the succeeding three weeks stored considerable honey and built up into good colonies. This history brings them to the first of July, 1919. Then all sources of nectar failed, so far as surplus is concerned. From that time until May 18, 1920, the bees have lived from hand to mouth, starved or been fed. I lost some bees by starvation on May 16. They had been shut up by stormy, cold weather for three days and did not have sufficient stores, even for that short time. Usually, here, the 16th of May marks the beginning of our heaviest honey flow, the bees having begun to swarm in April. This year a late frost after Easter cut off the meagre supply of nectar and caused the bees to tear down their queen cups and kill all their drones. About half my colonies had enough stores, with what they could find, to pull through without feeding. The weak and deficient ones I have fed steadily. They are now the strongest and since the 18th of May have been storing some honey from horsemint, which is in full bloom, but because of drought is secreting little nectar. Our early mesquite bloom and gaillardia (Texas marigold) bloom were failures for the same reason. In addition to drought, we have had much cold and windy weather this spring. Take it all in all, this has been the worst season for bees that I have ever experienced, and my experience began in 1871.

Austin, Texas.

The above letter is interesting, especially from the statement that the change of location "seemed to invigorate" the bees. Our correspondent ascribes it to change of climate or of elevation. But we have seen similar "invigoration" when we moved bees only 20 or 30 miles. The eminent teacher, Mr. Demuth, asserts that there is a great deal in the "colony morale." We believe he is right and we believe also that moving bees to new fields has a beneficial effect upon them. The above letter is another testimonial in that direction.—Editor.

## BEE NOTES

By Rev. A. A. Evans

### A Starvation Swarm

Some years ago a dear, good friend of mine related to me a curious bee experience. It was a cold, bleak spring, and his solitary stock was all empty of food stores. He was aware of this, and determined to give them some candy, by and by. My friend is one of that class which thinks tomorrow is as good as today, and there is a saying that "tomorrow never comes." At any rate, the feeding, which should have been done at once, was put off. During a morning, swept by a northeaster, and a temperature almost Arctic, to his amazement he saw what looked like a miniature swarm; the bees came out, wandered aimlessly in the bitter wind for a minute and then settled in a benumbed knot some distance from the hive. "Now," says my friend, "after that you must give up those pretty ideas about the foresight and intelligence and good sense of the bee. When I opened the hive I found the queen and a small bunch of bees left, with just a few ounces of honey; for they were not quite without, you know; no, not without, or I should, of course, at once have fed them; a little honey was left. But could anything be more improvident, more fatuous, more idiotic, than to swarm on a cheerless March day, and in a world bare and flowerless?"

### Gallant Gentleman

Then I explained to my friend that this was what beekeepers call a "hunger swarm," which occurs not normally, but sometimes when bees discover there is not enough food to last them until the flowers come again and nectar is obtainable. There is just the chance that by the abandonment of the hive by a portion of the colony, the rest, with the queen, can live on in safety, and what he had seen was the rare, pitiful occurrence of bees sallying forth to die in order to save the rest of the stock. Bee nature and human nature can come sometimes strongly into touch, for is there not an echo of this in the story of that "Gallant Gentleman," Captain Oates, who, in the Antarctic expedition of 1913, quietly walked out into the blizzard? Starvation swarms may occur not only in the famine days of spring, but following on bad weather and honeyless weeks of summer. There sometimes comes, even in the height of the summer season, a period of cold and wet, which prevents honey gathering, and the population of the hive being at its greatest, the store of food rapidly disappears. Then it may be a portion of bees will emerge in rain and wind only for the purpose of saving the life of the hive. These are possibilities a thoughful beekeeper will always have in mind.

## DISCARDED CONTAINERS

By C. D. Cheney

My attention has been painfully directed to the menace accompanying honey containers which are discarded by housekeepers and others **without washing.**

This section has suddenly been attacked by American foulbrood, and no other explanation than the above can be offered for the extent and suddenness of attack; every yard has it, and only since last July. My object in writing is to suggest the benefit which may be gained by a campaign to get honey producers and dealers to place upon every container the request for the user to **"wash the container before discarding."** The expense would amount to nothing compared with the benefit to the bee industry wherever honey is consumed.

(Your experience is exactly in a line with ours. We have already tried to call the attention of the public to the danger of contaminated honey to beekeeping.

In an editorial published in June, 1913, and reprinted in July, 1918, in the American Bee Journal, we called the attention of beekeepers to the bad habit of wasting honey, as well as other food. Not only in unwashed containers, but in the remnants of the table, honey which is thrown away constitutes a danger, because there is a chance of the bees getting at this, second hand, and bringing to the hive with it undesirable bacteria. The very best-looking and best-tasting honey may contain in it germs which, absolutely harmless to human beings, would mean ruin to the brood of bees. It is true that, in most cases, honey is perfectly free from disease. But in case of contamination, the bacteria which cause disease are so small that scientific examination has often failed to find them. It is therefore very important that no honey be thrown away, whether from the plates of wasteful consumers or from unwashed containers.—Editor.)

## HOOVERING THE WOODSHED

By Mrs. Dora Stewart

"Fit only for kindling,' was my partner's verdict. We were inspecting an old woodshed that marred the only attractive spot on the premises we had just rented as an apiary headquarters. The monstrosity simply must be eliminated, even if I had to do it myself, for the space it occupied, beneath a group of three black walnut trees, was to be our summer parlor.

Soon after, my partner having sustained a fractured hip, it was indeed "up to me" not only to cope with the woodshed, but with little money and no experience, to grapple with the problems of equipping our bee plant as well, the most important item being an extracting house.

But when spring operations began, I found the cost of necessary materials, lumber, canvass, etc., for even the most modest of our plans, prohibitive. Also, labor was at a premium. Six hundred young men sent to France from a town of only six thousand, had had an economic effect. No one was available, even to reduce the woodshed to "kindling." "Who wants fires in warm weather?" And "winter was a long way off."

Be that as it may, the important problem remained unsolved. Of what earthly use would it be to spend one's summer persuading bees to fill their combs with honey, if we had no way to get it out ?

Armed with a hammer, the only tool I had ever used, I went out to the woodshed to think it over. After pulling out a few rusty nails and pounding in others, I gazed gloomily at the extracting machinery piled under the only water-proof section of the roof. Uncle Bob (not really my uncle, but a sort of community uncle, rich and untroubled by economic pressure), climbed over the fence, and, framed in the cobwebby doorway, stood smoking in sympathetic silence.

"Why don't you Hoover it?" he finally asked, with a comprehensive circling of his fragrant pipe.

"Impossible!" I told him, and examined again the old shed that bore eloquent testimony of prolonged private interviews between the heads of former renters and their obstreperous families. Broken glass everywhere, and parts of furniture were stacked in one corner. One might easily trace by the debris the descent from what was originally a screened-in summer kitchen, first to tool-house; from store-room to a granary for chicken feed, and on down to its present low estate. "Besides," I concluded, "It's too large for a beehive and too small for a garage, even for our fliver.'

"Why not an extracting house?" suggested Uncle Bob.

"Too near my neighbors,"and then by way of explanation, "the bees would sting the children."

"Move it."

Again I objected. It would surely meet the fate of the wonderful 'One-Hoss Shay," and our shiny new extractor would be swallowed up in the general collapse.

But Uncle Bob only waived his pipe airily. "Leave it to me, leave it to me," he said. "Just tell me where you want it."

The very next day the offending shed was moving sedately down the garden path. Two men, two planks, some rollers and a piece of strong wire had turned the trick. Nor had the building collapsed. Far from it. Its walls proved to be strong and the double floor and heavy sills held it intact until it could be anchored to the lean-to that served as a shelter for honey cans and cases.

"Propinquity," Uncle Bob called it. "Of course honey must be extracted near the cans and cases."

Having gained his point, Uncle Bob, with the aid of his helper, jacked up the shed and rested it on nine 4x4 posts, creosoted to discourage their use by ants and other small insects. This arrangement brought the floor of the extracting house to a level with the Ford bed, so that "Liz" can be backed to the door, and the honey brought in from our two outapiaries, easily unloaded. New wire screening tacked over the window openings, a new screen door, quantities of whitewash applied within, and patches without finally made the shed bee-tight.

"How about the roof?" I ventured to inquire.

"The Lord will provide," declared Uncle Bob, with the ready optimism of the financially well-fixed. But it was his helper (a junk dealer by profession) who, in "helping" himself to the scrap iron uncovered by the removal of the shed, dragged forth a new roll of tar roofing paper, apparently secreted so carefully by some one of our predecessors that he had never been able to find it.

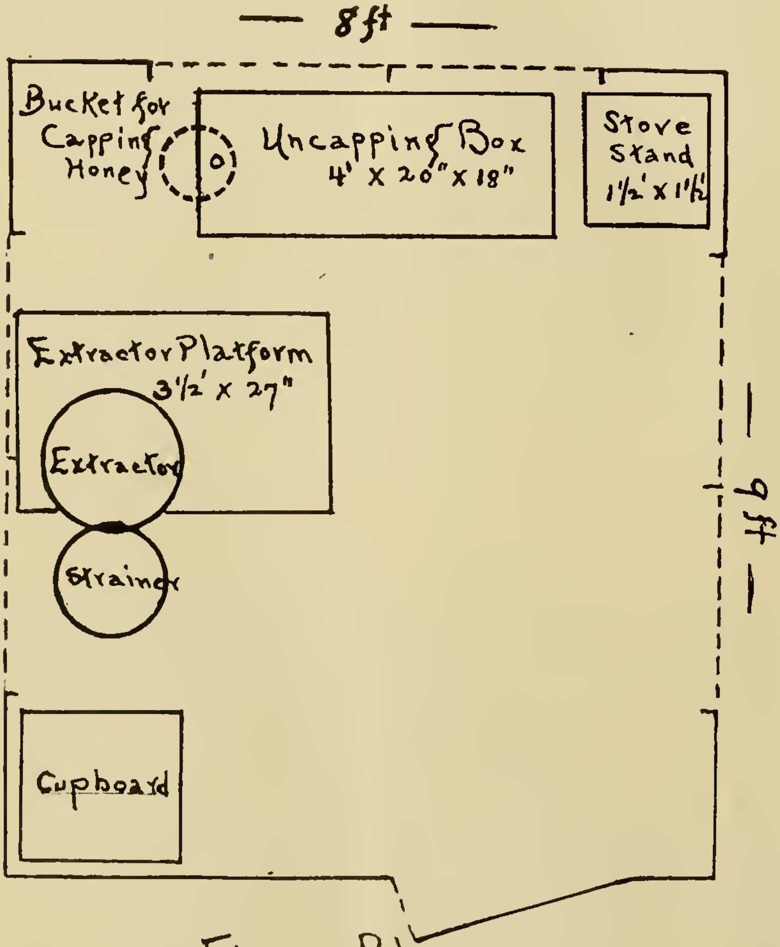
Thus there remained only the arrangement of the interior of the Hoovered shed. Our two-basket extractor, elevated to allow the honey to run by gravity directly into the strainer, stands on one side. The strainer itself, originally a 51-gallon honey tank purchased for home use, needed only a wire basket at the top to hold the cheese-cloth strainer. Five dollars seemed to be a large sum to pay the hardware man for such a basket—"best material" and the "most expert labor" notwithstanding. So I went forth seeking other worlds to Hoover. A 65-cent circular wire dish drainer, 6 inches deep, just fits inside the top of the tank, and suspended therefrom by picture-moulding hooks, fills the bill perfectly. The honey tank, or tank strainer, was then let through the floor of the extracting house, so that the honey gate is just inside the lean-to, and sufficiently high above the floor to allow a five-gallon container to stand under it. So the work of filling cans and cases can also be accomplished by gravity, and with a minimum of handling.

An uncapping box 18x20 in. by 4 ft, mounted on a bench 13 inches high, occupies the back of the extracting house. This box will accommodate 30 frames of honey at one time. The uncapping box has a galvanized iron bottom and the honey that drains down, through the wire screen from the cappings, runs through an opening in one end of the galvanized bottom, into a bucket underneath. To the right of the uncapping box is an oil stove on a small stand. The stove, a two-burner affair, also the pan that holds the water for heating the uncapping knives, were supplied by the junk man in exchange for the exhumed scrap iron.

An old cupboard, handed down from summer kitchen days, scoured and disinfected, occupies a corner for the accommodation of sample bottles of honey, feeding honey, small tools, etc. After the floor had been covered with scrap linoleum and all woodwork painted white, I ventured to include a description of the enterprise, together with the following table of its cost, in the regular monthly report to my convalescing partner:

**Extracting House**

| | |
|---|---|
| Wire screening for windows | $2.65 |
| Roofing (labor) | 2.00 |
| Creosoted posts | .95 |
| Lime for whitewash | .50 |
| Moving the woodshed | 3.00 |
| New screen door, complete | 3.45 |
| Uncapping box | 6.33 |
| Bench | 2.50 |
| Wire rack and galvanized bottom for same | 4.00 |
| Wire basket for strainer | .65 |



Floor Plan Extracting House.

Unloading the cases of honey

| | |
|---|---|
| Scrap linoleum | 1.00 |
| Stand for extractor | 2.40 |
| Paint | .75 |
| | $30.18 |

The extracting house has a capacity of a half ton of honey at one extracting without overcrowding its 8x9 ft. floor space. It is cool, even in the hottest weather, and "you can stand in the middle of it and reach everything in it," boasts Uncle Bob, who is fond of inviting his friends and acquaintances to inspect it.

One such visitor, a veteran beeman, made no comment. Uncle Bob followed him to the gate. "Didn't you look at the extracting house?" he anxiously inquired.

"I didn't see any extracting house," returned the visitor. "I went into a little white parlor and stuck around awhile waiting fer some one to pass the tea an' cakes."

Uncle Bob was mollified.

Best of all, when my partner was able once more to report at headquarters, he pronounced our equipment "bully!"

But I shall never know whether or not he was more pleased at finding an up-to-date extracting house ready for business at a cost of only $30.18, or regretful that he had not shared the fun of Hoovering.

## NEWS ITEMS ABOUT BEES

Serious and ridiculous statements from the daily press:

### Superstitions

In ancient days it was thought that the bee had "an ear for music"—strange was the reasoning—because even then it was customary for their keepers to make a tremendous clatter when they were swarming, to keep them home.

Even in our own New England, in other years—as well as in various parts of Europe—it was believed that bees would leave the hive on the death of a member of the family unless they were told about it. So to avoid this loss a maid or a friend of the family would knock on the hive and tell them about it.

In some parts of the civilized world today bees "are put into mourning" when a member of the family dies. That is, someone knocks on the hives and tells them of the death, and then drapes each hive with a strip of crepe. If this were not done the superstitious believe the bees would fly away.

Another interesting fact about bees is that so long ago as the days of ancient Egypt the good order exhibited by bees in their government of themselves was commemorated by Egyptian kings employing them as symbols of royalty. As such they appear in hieroglyphics that exist today. The same thought made bees the dominant decoration upon the mantels and flags of French kings, and little bees made of gold were buried in the tombs of some of the French kings.

Another superstition of old days still found in some sections of England is that which declares the beehives must be turned around when the funeral procession of a member of the owner's family passes them. If the hives aren't turned it is believed the bees will immediately swarm and leave their hives.—Rochester, N. Y. Herald.

### Bees Steal Jam

A peculiar phenomenon was observed in the apiary of Norris S. Dailey, in his orchard at the north part of the village. While he was removing honey from the hives he saw that three combs were filled with a pink substance. Upon investigation he found that instead of honey it was raspberry jam, except that the seeds which usually accompany the jam were absent. He says that other apiaries in the village have been affected in a similar way to a less extent.

All the jam in the honey combs comes from a preserving plant, which is over half a mile from Mr. Dailey's home. Swarms of honeybees and hornets have invaded the plant during the past week, robbing the uncovered jam jars of their sweets, often stinging the operators, and on one occasion driving the whole force from the building.—Auburn, N. Y., Advertiser-Citizen.

### Bee Sting Serious

Severely poisoned by the sting of a bee last Thursday, John Hummel, son of Mrs. J. W. Hummel, of Wapato, is reported to be recovering as a result of prompt medical attention. The unusual severity of the sting is attributed to arsenate of lead, supposed to have been absorbed by the insect in deriving nutrition from plants so treated.—Yakima, Wash., Herald.

### Sting on Tongue

Stung on the tip of the tongue by a bee, while he was driving his automobile from Pomona to his home in La Verne, H. N. Hanawalt was ren-

"Milking the honey cow" a friend terms the filling of the cans dered unconscious and narrowly escaped wrecking his machine. Hanawalt was eating figs and did not notice a bee on a piece of fruit he put into his mouth. The business end of the bee connected with the very tip of his tongue. His first sensation was a sharp pain, followed by weakness as his senses began to leave him. He barely escaped striking a telegraph pole as he halted his machine.—Harrisburg, Pa., News.

### Excitement

Two large swarms of bees settled on the front end of a buggy standing south of the Rochester National bank on Third street SE, following a sensational flight down Broadway yesterday afternoon. One queen led her hosts to the thills. The other chose the right front wheel for her capitol.

All went well for about three seconds, until Dobbin, who was hitched between the aforesaid thills, began to feel nervous. He switched his tail tentatively. About that time a whole regiment of bee shock troops shoved their bayonets into Dobbin's flanks. A bombardment with heavy artillery was the only recourse for the horse. The buggy had already begun to travel the road to the family wood pile when a passerby unhitched the horse and led him away.—Faribault, Minn., Daily News.

### Bee Handler Dead

Franklin L. Burson, 83, a well-known beeman, is dead at his home here as a result of being repeatedly stung a few days ago when he was handling several hives of bees.—Marion, O., Star.

## WINTERING

By Daniel E. Robbins

I will outline a plan of wintering that has given me very satisfactory results for 35 years.

First, a fair-sized colony with a good proportion of young bees, with plenty of honey and a good queen. I use 10-frame Langstroth hives and leave the brood-chamber without change except to take out poorly filled frames and put in enough filled ones to make 7 or 8 frames of honey.

I leave the hive on the summer stand, one story, with oil cloth quilt over frames and the regular cover. I restrict the entrance to about 4 to 8 inches length by ¾ inch. I protect by a box without bottom, 28x32 in. square, 30 inches deep on the south and 36 inches on the north. I pack with forest leaves or something equivalent; make the leaves firm at the ground to keep wind from blowing under. I provide a tunnel from the entrance so bees can fly.

The cover is 3 feet square, 2x2 in. cleats, inch boards fitted close together; the slope runs water off, and if the packing does not touch the cover it will stay dry, though I always clean off heavy snows.

In February I examine to be sure all have honey, by taking off the top of the packing of first hive and putting in a box to allow examination; the second hive's packing is put in the first, and so on till the last one, which receives that from the first.

In March I see that every hive has brood; if not, give some eggs and young larvæ from some good colony, so they may raise a queen, and when settled warm weather comes I remove the packing, storing the boxes around the fence of the beeyard, sometimes saving part of the leaves in them. These shelters, though made of old scraps of lumber, last for years, the covers being the first to fail.

Payson, Ill.

## BEEKEEPING IN ARKANSAS

We are in receipt of a bulletin recently issued by the Experiment station of Arkansas with the title, "Beekeeping in Arkansas." It is written by Prof. W. J. Baerg, and contains 32 pages. It covers the fundamentals of beekeeping very nicely and should be in the hands of every Arkansas beekeeper. Those interested should write to Prof. W. J. Baerg, Fayetteville, Ark.

## TEXAS CONVENTION

The Texas beekeepers will meet in annual convention for the 28th time at College Station, on August 9, 10 and 11. An extended program of live topics is announced and visiting beekeepers will find three days packed full of interest. Texas is a big State and boasts of a number of men who may be called big beekeepers. It is worth the while of those of other sections to attend a Texas convention and get pointers from the live wires of the Lone Star State.

## SUMMER MEETING

The summer outing of the New York State Association of Beekeepers' Societies will be held at A. L. Coggshell's apiary, Groton, N. Y., on Friday, August 6. There will be many prominent speakers on the program. Mr. Geo. H. Rea, Extension Specialist, Ithaca, N. Y.; Mr. Ernest Root, of the A. I. Root Co., Medina, Ohio; Dr. Geo. G. Atwood, Director Bureau of Plant Industry, Albany, N. Y., and we hope to have with us Mr. K. Hawkins, of the G. B. Lewis Co., Watertown, Wis. Also addresses from others attending. Let us do our best, take a day off and make the attendance better than the four hundred and fifty of last year.

J. W. Cunningham, Sec.

## BEES IN A BELL

"For many years the tower of North Benfleet Church was so cracked that the largest bell of four could not be used. When the tower was rebuilt, about 20 years ago, the large bell was found to be full of very good honey. The combs were all dark—but not the honey. I could not see it myself, but the gardener at the rectory told me about it."—C. Reed, in British Bee Journal.

# BEEKEEPERS BY THE WAY

### A Fried Mush Convert

Some years ago James E. Starkey, now of Bunker Hill, Ind., was teaching school near Peru. He boarded in the home of George S. Demuth and the lady of the household frequently served fried mush and honey. By the time his term of school was ended he had formed the habit to such an extent that he felt that he must have bees of his own. Like most other beginners, he bought bees wherever he could find them and soon found himself with hives of every kind which had ever been popular in that region.

The variety of kinds and sizes of hives did very well until he chanced to hive a stray swarm on drawn combs. The bees brought American foulbrood, with the usual result. When Starkey discovered what he had, the entire outfit was well seasoned with it and he decided that a bonfire would provide the best disposition of his miscellaneous collection of hives. By shaking the bees into new Langstroth hives and destroying the others, he in time overcame the trouble. By the time he had mastered the disease in his own yard he had become a real beekeeper and graduated from the beginners' class, although he still liked honey on fried mush for breakfast.

As time went on the State Entomologist was looking for a beekeeper who could drive disease out of his own yard, to help drive it out of the State of Indiana. Starkey is now helping Johnson and Yost in their effort to clean up the State. Success to them.

James E. Starkey

### HERMAPHRODITE BEES

May 20 last I introduced a queen that I got of a breeder in Alabama. Today I saw some nice yellow-looking young bees crawl around near the hive. Picking one up I found it a freak, such as I never saw or heard of. The thing tried to sting me and had a stinger. It looked like a worker bee in every way; also same size, but had the eyes, head and tongue of a drone. They crawl out and away from the hive of their own accord. I saw several dozen run out; none could fly. Nearly all that I examined had stings. They surely are not worker bees, as they have drone heads, and they are not drones, as they have stings.

Did you people ever see the like? Please let me know. I enclose a few as samples. W. M. SMITH,

LeSueur Center, Minn.

The bees which you sent are dry, so it is difficult to examine them thoroughly, but they evidently have eyes that join at the top of the head, just like those of drones. Otherwise they appear as workers.

They are freaks and that is probably why they crawl out of the hive to die. An accident of this kind is rare. It might interest the scientists at Washington if you sent them a few for examination. Send to the Bureau of Entomology.

### JUNIORS ORGANIZE BEE CLUB

Seven boys met at the home of H. C. Cook, 4521 Park street, Omaha, Saturday, June 12, and organized the Douglas County Junior Bee Club, elected their officers and received instructions in the beekeeping work.

This is the first boys' and girls' standard bee club to be organized in Nebraska, and one of the few organized in the United States. This work was outlined last year by Mr. H. C. Cook, an expert beekeeper of Omaha, and County Agent E. G. Maxwell. It was given a trial last year, but not on the standard club basis. Five boys took up the project and the plan worked so successfully it was decided to organize a club this year.

The rules of the contest specify that the members must start on June 5, with a ten-frame hive, a one-frame nucleus consisting of a frame of brood, adhering bees and queen and that all the bees must be produced during the contest from the nucleus, and no assistance be given by addition of other bees. In 1919 each of the boys who were in the contest produced a good strong colony and enough honey for their winter use from the one-frame nucleus started June 5th. One of the boys produced two strong colonies of bees and 32 pounds of comb honey from June 5th to September 5th.

The club work has been outlined as a two-year project, the first year work, or "Project" will consist of building up a colony from a one-frame nucleus. This is designed to teach the members to raise bees. "Project 2" of the club work will begin in the fall, or at the termination of "Project 1," and will cover a period of 12 months. During this contest the members will have a chance to demonstrate their ability to handle full colonies of bees for comb or extracted honey production.

EARL G. MAXWELL,
County Agricultural Agent.

### SUMMER MEETINGS

The Panhandle Beekeepers' Association and the West Virginia State Beekeepers' Association will hold their summer meeting at Elm Grove, W. Va., August 10, 11 and 12, 1920.

The meetings will be addressed by Dr. Phillips, of Washington, D. C., Mr. Kenneth Hawkins, with the G. B. Lewis Company, of Watertown, Wis.; Mr. E. R. Root, of Medina, O., and Mr. T. K. Massie, of Hatcher, W. Va. The deputy inspectors will tell of the good work being done for the beekeepers of West Virginia.

WILL C. GRIFFITH, Sec.

### BEES KILLED BY SMELTERS

Acting on the suggestion of L. B. Bell, an Arizona beekeeper, Governor Campbell, of Arizona, has instructed the State Entomologist and Plant Pathologist of that State to make a complete investigation of Bell's claim that beekeepers are losing money through damage to honey plants in the vicinity of the smelters. Bell claims that fumes from the smelters of the United Verde and Extension Smelter Company, in Verde Valley, have so damaged the flowers in that community by fumes from their stacks that beekeeping is no longer profitable. He asks a State investigation and if his claims are substantiated by the scientific authorities of Arizona he will ask that the smelters cover the expense of moving the bees in the affected territory to a new territory nearby where the fumes of the smelters do not reach them. He cites as authority for his action, that the beekeepers were in the valley before the smelters and have the right of priority, a question which has not been tested in American courts regarding beekeeping. The charges are that sulphur is deposited on the bloom of honey plants which are visited by the bees, and that this causes the honey to taste like a good variety of parlor matches. An excellent write-up of the case has been given in the Los Angeles Times.

KENNITH HAWKINS.

### MASSACHUSETTS BEEKEEPERS MEET

By W. H. Wolff

A very successful and enjoyable meeting of the Hampshire, Hampden and Franklin Counties Beekeepers' Association took place at the home of Mr. and Mrs. C. H. Taber, at 7 Yale street, Holyoke, on Saturday afternoon, June 19, with about 50 beekeepers in attendance.

The principal speaker of the occasion was Mr. F. S. Davis, who presented a paper on beekeeping conditions in Florida and the South, and his experiences in that section. Other impromptu speakers were Otis E. Hall and W. H. Wolff, of the Hampden County Improvement League. Mr. Hall briefly told of the work of organizing the Boys' Bee Club, and asked for the co-operation of the older beekeepers. Mr. Wolff said that the present was the beekeepers' great opportunity to develop this industry in a big commercial way. He urged simplified beekeeping, the running of the colonies for extracted honey in big two-body hives, out-of-door wintering and leaving 45 or 50 pounds of honey with the colony in the fall, so as to eliminate the worry and work of feeding, and to insure the bees plenty of food for early and abundant brood rearing.

After the program Mr. Taber invited the guests to inspect his apiary. One of the interesting features was a couple of colonies that were started from 2 frame nuclei with queens brought from Mississippi by express and received by him on May 15. These were building up into strong colonies and gave promise of storing a surplus of honey this season.

Refreshments of cake, fruit, punch and ice cream were served by Mr. and Mrs. Taber.

### DOPE FOR STINGS

A troubled beekeeper writes this office making inquiry after stingless bees. I fear that many beekeepers, including the editors of our valuable bee journals, do not appreciate the atrocious pain and subsequent distress caused many people by the sting of a bee. It is so severe as to make some people actually ill for two or three days, and death has resulted in some cases, either from many stings or from a single sting on some susceptible part of the body.

My wife is very sensitive to the effects of stings. She also has a high regard for the virtues of hot water as a curative agent for bruises, pains and local irritations. She discovered that hot water promptly applied and continued for some minutes overcomes almost or wholly the effects of a sting. Considering this in the light of my medical studies, I concluded that it results from the disintegration of the animal poison, varying degrees of heat having the power to alter the molecular structure and hence the character of most substances. This suggested to me that some other agent might perform the same purpose. As tincture of iodine is very penetrating and has a strong chemical reaction, I experimented with it and found that it is in most instances quite as effective as hot water. It is a household remedy almost everywhere available, and a small bottle can be kept at the beeyard, saving the inconvenience and loss of time in heating water.

It is an axiom among physicians that where many remedies are suggested, it is because no one of them is entirely satisfactory. I have heard of and tried out many remedies for bee stings, but these two are the only ones in my experience that are really effectual. The iodine must be used immediately, to neutralize the poison while still at the point of puncture. Moist heat is effectual after the lapse of some little time. These measures are equally useful for other surface bites and stings.

While discussing this subject it is well to mention the need, generally understood, for instant removal of the sting by pushing it out sidewise with the finger nail, avoiding pressing the poison sac, which would force the poison into the tissues.

S. A. JONES,
Washington.

### CARDBOARD CASES

By A. F. Bonney

There is certain to be a great shortage of cases for square cans, for mailing honey this fall, but fortunately, they may be made, and at a cost much less than the regular article.

There are thousands of tons of material to be had at actually no cost, in the boxes used to ship goods of all kinds, and the writer has planned as follows:

Make forms to mark by, one to cut a piece which will cover the four sides of the can, the other to cover the two sides and ends. Cut notches where the cardboard is to be bent, and guided by these cut partly through the material with a sharp knife and bend the resulting case around the can. It is hardly necessary to fasten the joints, but if it is desired, a strip of tough brown paper may be applied, using liquid glass for a paste, as it dries almost instantly. A stout cord tied around the two pieces of the case will hold it securely. I have used such a case with satisfaction.

In using liquid glass, pour some into a dish and use a small, one-inch sash tool to apply it. If it becomes too thick, it may be thinned in the dish with water.

I have found a pair of tinner's "snips" or shears the best thing with which to cut the cardboard, as some of it is very thick and hard.

I have mailed friction-top pails safely by putting about three thicknesses of the cardboard around the can and a round piece over each end, then wrap in paper and tie; but the top of the can must be soldered, and four lumps of solder equidistant on the joint is enough. A little powdered rosin is all that is needed to make the solder hold on new tin.

### OHIO STATE FAIR

From the premium list of the Ohio State Fair, to be held at Columbus, from August 30 to September 4, we extract the following information:

"At the annual meeting of the Ohio State Beekeepers' Association, held January 26-31, 1920, a co-operative organization was entered into between the members of that organization and the management of the Ohio State Fair under which the beekeepers agree to furnish the honey for the 1920 State Fair, while the Fair management accepted the responsibility for staging and caring for the exhibit. No premiums to be offered or awarded. Under this arrangement the beekeepers agree to furnish the honey, putting it up in containers supplied by the Fair management.

**A Noted Beeman**
Crepieux Jamin, M. D. The first French civilian rewarded by the King of Belgium with the Order of Leopold, for services rendered to 3,000 wounded soldiers.

"The Fair management supplies the containers, paying transportation both ways, furnishes labels, which shall bear the name of the Ohio Beekeepers' Association and an identification number; furnishes a numbered list of all exhibitors, numbers to correspond with exhibitor's number on label; installs exhibit, cares for it during the fair, disposing of same at end of exhibition period, remitting to each exhibitor his pro-rata share of the proceeds after deducting cost of containers used."

This is certainly a novel arrangement and beekeepers of other States will watch with interest the success of the plan. To stage an exhibit worth while, with no premiums offered, will certainly indicate a live bunch of beekeepers in Ohio.

## Co-operation

By A. F. Bonney

For Sale—Northern grown Rocky Mountain extracted (strained) honey, the purest and most wholesome sweet; two 5-gallon cans (120 pounds net weight) only $24 f. o. b. here. Single can $12.50. Satisfaction and delivery guaranteed. Send payment with order. ————

Honey—White clover, guaranteed from our own apiary; 60-lb. can $15. ————

If anything were needed to fortify the argument that honey producers need to get together on prices the two ads above would furnish it, for there is a difference of $2.50 on a 60-pound can.

The ads are a good lesson on advertisement writing. The low price man uses seven lines, fifty words, at seven cents a word, at total of $3.50 per insertion, to advertise a low price, while the other advertiser uses but seventeen words, at a cost of $1.19. The dashes after the ads are put in in place of the names and addresses of the parties paying for them.

Cannot something be done to equalize the price of honey? Personally I believe we need National, State and County organization.

Twelve dollars a 60-pound can is 20 cents a pound, **less** the cost of the can, now about $1; advertising, which will not be less than a cent a pound for the honey sold; drayage and incidentals. Deducting from the $12 the above items, which will amount to about $1.90, it leaves but a trifle less than 17 cents a pound for the honey. When it is noted that the price for honey ranges from 22c for dark amber to 24c for light amber, and up to 38-45c in New York, the need of co-operation is made the more apparent. Chicago quoted Cuban light amber at 14-14½c.

A party in Cuba reports that "Honey is worth today $1.15 a gallon." That is 9½ c a pound. If we keep on cutting each other's throats we shall soon be in the Cuban class.

Buck Grove, Ia.

## A Cheap Feeder

By M. W. Greer

In the May issue of the Journal, on page 168, your correspondent, Mr. Ezra Wiggins, gave his method of feeding his bees and closed by saying that if any one knew of a cheaper, simpler or handier way, to pass it along. I tried his plan some years ago, but I did not like it very well, as I found it difficult to get the syrup to run into the cells unless it was made very thin; but I have devised a method that suits me the best of anything I have ever tried. It is not only cheap and convenient, but works to perfection. First, I get one of those tin containers in which coffee comes, holding one pound. They are about three and one-half inches in height and five inches in width, and hold three pints. Then I take a sharp instrument of some kind and punch a row of small holes just below the rim, punching from the inside; then get a saucer or tin pan, or what is still better, one of those earthen saucers that the women put under their flower pots, as they are a little rough, so that the bees can crawl over it. Now I fill the can or cup with syrup, and put the saucer or pan on top. I hold firmly, and with a quick motion invert all together. I remove the cover from the hive, place the feeder on top of the frames, put on a super, then put something around under the outer edge of the saucer for the bees to crawl up over to get at the syrup—a roll of paper or som old cloth, a piece of old rope, or perhaps some chips of wood will answer. Then I put on the cover and the bees do the rest.

(This is the atmospheric feeder, used by many. But the suggestions given are somewhat novel. Everybody has coffee containers, and so the feeder costs nothing.—Editor).

# DR. MILLER'S ANSWERS

Questions are answered in order received. As we receive more questions than we can answer in space available, two or three months sometimes elapse before answers appear.

### Spraying—Location—Supplies

1. Will the spraying of apple trees injure bees, if so how would you advise to remedy it?

2. Would you think my location favorable for beekeeping? Our main honey plants are white clover and Spanish needles. I am in Wayne County.

3. Where would you advise me to purchase supplies? ILLINOIS.

Answers.—1. If apple trees are sprayed when in bloom it will not only be bad for the bees that get the poisoned nectar, but it will be bad for the apple crop, since the poison will injure the blossoms. Unfortunately there is no law in Illinois against spraying fruit trees in bloom, so your only recourse is to appeal to the owner of the trees not to spray during bloom, not only because it injures the bees which are his good friends in fertilizing the bloom, but because it will hurt the apple crop.

2. With plenty of white clover and Spanish needles you ought to succeed.

3. Purchase from any of those advertising in this Journal, other things being equal giving preference to those nearest, so as to save freight.

### Pratt's Method of Queen Rearing

Would you be good enough to define Pratt's, of Swarthmore, Pa., method of queen rearing, as I see mention of it made in Alexander's writing? Dr. Miller also lightly touches the subject in "Fifty Years Among the Bees."

If I should see a book advertised entitled "Pratt's Method" I would not bother you, as I am getting disgusted with the foolish questions those "gum beekeepers" ask. If they would only invest in an elementary beebook and not bother professionals with their nonsense! CALIFORNIA.

Answer.—The Swarthmore system of queen rearing was based principally upon Doolittle's cell-cup system. But E. L. Pratt, who gave it this name, was the inventor of it. His assertion was that one could rear queens in small sections, 6 to a frame, and get them fertilized by setting such frames, containing 6 boxes, half opening on one side, half on the other, fastened to stakes out-of-doors. Descriptions of his methods were given in Gleanings for 1901, pages 434 to 504. He had also a method for making molded cells, by pressure on the underside of a top bar. He had a queen nursery and also asserted that he could winter as many as 75 queens in a single hive, as stated in Giraud's "Traite Pratique de l'Elevage des Reines." His method is undoubtedly economical. But we doubt that it was practical. At any rate, the A B C barely gives him mention in its "queen-rearing" article, and Pellett did not mention him in his "Practical Queen Rearing."

Your criticisms of the "foolish questions" may induce some of our beginners to invest in a text-book and read it before asking questions. They should bear in mind that a bee magazine is intended for matters which are not given in books. But the elementary questions of the business are answered in almost any of our text-boks.

### Bees Fighting

I am just starting in bees and have five hives, which wintered well; have plenty of bees and stores. These bees seem to have a continual fight on, when it is warm enough for them to be out. At night there will be probably three big tablespoonfuls of dead bees scattered in front of the hives. I noticed them fighting this way in the winter, when they could get out. The hives are set close together and the entrances are about 3⅛x2 inches. If there is robbing, I can't tell it, and I have been careful about exposing honey. Have only opened them once this spring and that was after supper when they were not flying. Is it natural for bees to fight this way? IOWA.

Answer—.No, it is not natural for bees to fight this way. Usually, when there is any latent fighting, it is due to some of the colonies being stronger than the others and to the weaker colonies not being able to fully protect their stores. There is also a possibility of fighting when there is drifting of bees from one hive to another, on account of their being in too close proximity to one another. Did you move them closer together for winter? If you did, that would explain the fighting. If any of your colonies are weak and have a large amount of stores which they cannot protect, it might be a good plan to remove this extra honey and give it back to them when they are strong enough to take care of it.

### American Foulbrood and Treating the Same

1. Authorities on bee diseases seem to be at sea of late in distinguishing American from European foulbrood symptoms. and an inspector examining my colonies could not tell me positively whether mine had one or the other. Would you give me some positive distinction of these diseases by some competent authority?

2. I am experienced with the shaking method of treating American foulbrood. If there is any shorter, less drastic means of merit kindly describe same.

3. Since I have 12 or 13 colonies to treat, would like to save the hatching brood. Which is the best method for doing this, when using the shake method? I had planned to tier up the shaken frames containing hatching brood and later shake same and give young queen, of Italian blood. MICHIGAN.

Answers.—1. You are right in stating that authorities seem to be at sea in distinguishing between the two diseases. This indicates how little we know about these matters as yet. However, the main things known about the diseases are:

In American foulbrood the larvæ die about the time when they are about to be sealed up in the cell; the larva rots down. assumes a brown coffee color, has the odor of joiner's glue and is stringy or ropy, so that a toothpick inserted in its body brings back a sticky matter which stretches out a couple of inches and flies back like india rubber.

In European foulbrood the larva dies mainly when still coiled in the bottom of the cell, or shortly afterwards. There is very little ropiness.

These are the statements of positive authorities. but there is now a tendency to believe that these symptoms are not always reliable. The best authority is Dr. G. F. White, specialist in insect diseases, at the Bureau of Entomology at Washington. Write to this bureau and ask for Bulletins 809 and 810. both by Dr. White. Send samples of doubtful brood to Dr. E. F. Phillips, at the same Bureau of Entomology. This is the best information that can be supplied up to this date.

2. With real American foulbrood, we believe in the shaking treatment, nothing less.

3. Tiering up the brood to hatch it and thus save it has been recommended. If it is done with great care, it may prove good. In any case it is well to be overcautious.

A beekeeper whose bees suffer from foulbrood should not get discouraged, but be persistent. We have had experience with foulbrood and have made greater crops since then than before. It is perhaps because it compelled us to be more attentive to the business than ever.

### Active Vs. Inactive Bees—Large Hive—Glass Hive

1. Why is it that colonies of bees right in the same yard and same conditions do not all seem to get busy at the same time? Some days I notice certain hives are very active and other hives quiet. Then possibly the next time I go to look other hives are busy and the first mentioned are still.

2. How about hiving a swarm of bees into a big Jumbo hive? Would it be all right, or would it be only in case the swarm is an extra large one?

3. I should think these big swarms in Jumbo hives would never be bothered with moths, unless they become queenless.

4. Are bees in large hives liable to be more scrappy when you take honey from them than colonies in 8-frame hives?

5. Some good beemen claim they can artificially raise 5 or 6 swarms from one hive in a season, if they don't care to get any surplus honey. Others say only the rousing big swarms pay. Now how about it? I should think these nucleus hives would be constantly in danger of moths, etc.

6. Don't you think it would be best to get 1 swarm from each hive and then discourage any more?

7. Don't bees attempt to raise a new queen in a Jumbo hive, or, if they do, wouldn't they surely swarm?

8. If a man had all twelve-frame hives instead of smaller ones, wouldn't he be compelled to make his increase swarms artificially?

9. I notice that some of the Southern beemen use great long hives or else the pictures in their "ads" are misleading. What is their object for using different hives than we use in the central States?

10 Do you think it would be well for a new beginner with bees to make a hive with glass sides and top, so he could watch them and learn? Or couldn't a person find out much that way? Should such a hive be kept darkened except when you want to watch them?

11. In case a colony becomes queenless. are the remaining bees sure to take a young worker bee and develop it into a queen, i. e., if they have any such brood available?

12. How does a man raising queens prevent the first one hatched from destroying the ones that are not out or fighting with the queen of the colony? NEBRASKA.

Answers.—1. Why don't you and your neighbors get up at the same time always? Bees are usually active insects, but conditions and tempers differ, even among them.

2. If the swarm is small it will take it longer to fill a Jumbo or a 13-frame hive than an 8-frame. But they will fill it if they have a good queen and a good season.

3. No bees are bothered with moths when they are strong enough to cover their combs, whether in a large or a small hive.

4. No, not if handled properly.

5. They can, but the large colonies pay best.

6. Sure.

7. Bees will rear queens in any size of hive, if they wish to swarm.

8. Yes, he would have less swarms. But he

might still have more swarms than he wanted if he did not look after their other requirements, such as giving them plenty of surplus room, shade and ventilation.

9. Those men who use very long hives probably do it to produce bees to sell by the pound, and queens, instead of surplus honey.

10. A hive with only one frame and glass on both sides is very useful to learn natural history. It must be kept covered when not inspected. Try it.

11. Yes. One or more.

12. By removing all the cells that he wants on the tenth day after making the colony queenless. Read some good text book.

## Number of Pounds of Bees to Hive

How many pounds of bees should I put to the hive for good results in starting an apiary by buying bees by the pound? ILLINOIS.

Answer.—A pound of bees with a queen, put upon full combs, often give good results. But much depends upon the crop and the season. It would be better to have two pounds with a queen. The more the better, as a matter of course.

## Sugar Candy for Bees—Moths

1. How much water do you put to a pound of sugar for feeding bees in a Thale feeder?

2. The comb in the hive of bees I have is as black as coal, and on investigating it I found moths in them. I cut out two big patches in the comb. Was that the right thing to do? What makes the combs black? Should the bees be transferred to a new hive with foundation in it? If so, when should it be done, and how?

3. In watching the bees the other day I saw a couple of bees pulling a long piece of straw in the hive. Is that a natural thing for the bees to do?

4. Would it be all right to feed flour for pollen till the trees get in bloom? ILLINOIS.

Answers.—1. Half a pound of water for each pound of sugar. For spring feeding you can make it thinner. Feed it warm if possible.

2. If the combs are black and there are moths in it, your colony is probably worthless. If not, it should be transferred. The comb is black from the discharges of the drones, the travel of the bees and the rearing of brood, for many years past.

Directions for transferring are given on page 25 of the January number, also on page 96 of the March number.

3. No, they don't use straw to build their combs, nor to sleep on. Some mischievous urchin, likely, had tried to drive the straw in there and they were trying to pull it out

4. Yes.

## Hives Tainted With Foulbrood

If hives were tainted with foulbrood three years ago and not used since that time, would they develop foulbrood again if not treated? How would it do to use a painter's blow torch for disinfecting them? We can boil frames, but not hives.

Answer—Hives tainted with American foulbrood are said not to be, and might not be unsafe, but if they are unsafe after the bees are removed from them, all experiments indicate that they would still be unsafe after three years. A painter's or tinner's torch is very efficient in singing either the frames of the hive body, and it takes but a very short time to do it. In that way we remove all suspicion of danger. Indications are that hives which have contained brood diseased with European foulbrood would be entirely safe after that length of time.

## Introduce Starters—Transferring

I have bought 3 swarms of bees, and as the man I got them from didn't use starters, they have built the comb in crosswise. It will have to be cut in order to get it out. How am I to do this? They have heavy stores, as they have worked nearly every day this winter. Would it be best to add another super with frames and starters? The hives my bees are in are 8-frame, home-made hives, and I wish to transfer them to 8-frame Hoffman hives later. TEXAS.

Answer.—Since you want to transfer those bees into other hives, we would advise you to put the new hives on top of the old ones and drive the bees and queen up into them by smoking and drumming. After the queen occupies the upper hive, you might place a queen excluder between the two stories. When the brood is all hatched from the lower story, which will be in 21 days after driving them into the upper hive, you may remove that lower story and cut out the combs. You may get rid of every bee in that hive by putting it at the top of the other for a day, with a bee-escape between the two. Use full sheets of foundation in the new hive, well fastened with wires, and you will have straight all-worker combs.

## Temperature for Bees' Flight

Will you kindly tell me what temperature has to be reached in winter to induce bees to make a flight? WYOMING.

Answer.—For flight in winter the temperature should be about 50 degrees in the shade. At 55 degrees the bees fly comfortably, provided it be not windy. We have seen bees fly when the thermometer was about 40 degrees in the shade, but many were lost, because they became chilled when they alighted in a shaded spot. Much depends upon the amount of breeze and sunshine. When the sky is overcast with clouds, with an occasional burst of sunshine, the thermometer varies quickly and many bees are lost.

## Hives—Transferring—Ants

1. I am just starting in the bee business; have 8 hives in boxes; want to transfer them to modern hives this spring. Which is the best 8, 10 or 12-frame hives?

2. When is the best time to transfer them?

3. The ants have been giving me much trouble. How is the best way to keep them out?

4. I have them in a house 6x12, 5 to the side. They seem to be in fine shape. Would you let them remain in the house, or would you take them out this spring. The house is well ventilated.

5. What is the best plan to keep the moths out? ALABAMA.

Answers.—1. Opinions differ as to size of hives, but 12-frame hives are none too large for prolific queens. Some use 2-story 8-frame hives.

2. The best time to transfer is during fruit bloom, or at the beginning of the honey crop. See the replies in March number.

3. The ants do not get inside of healthy colonies. They gather on top, where there is warmth. If you can find their nest, outside, pour a little gasoline into it and set fire to it. Be careful not to have the gasoline can near when you strike the match. Kerosene, salt, powdered sulphur, dry ashes, are all recommended to keep the ants away.

4. A bee house is all right to keep bees, if each colony has its separate entrance in the wall.

5. To keep out the moths, keep your colonies strong. Weak colonies will be invaded by the moths, especially if they are queenless. Strong colonies never fear the moths, though one or two may manage to get in occasionally.

## Non-Yielding Colonies

I have a problem that I have tried to solve for the past three years.

I have four colonies on the top of a hill, about 75 feet above the surrounding country, about half a mile from Grand Rapids, and there is no shade and no chance for any. I use sun boards raised 4 inches above the top of the cover by four blocks on corners, which gives ventilation under the board, which is large enough to keep the sun off the sides of the hive except in the early morning and late in the evening.

There is plenty of sweet clover in the neighborhood to give a good surplus, but I don't get a pound, and not half of my bees swarmed last year.

They go into winter quarters in good condition and come out in the spring healthy and strong. My winter cases allow 3 inches of straw for packing all around and on the top. Now, can you tell me why I don't get a surplus and more swarms? There are no other bees kept within four miles, as I have made quite a careful investigation to find out. If this is a sticker will you please tell me how I can improve the present conditions? I am probably not an expert judge, but I think my winter cases and sunboards are about the best I can use under the circumstances. What do you think?

I use the ⅞x12 inch entrance in winter and about 1¼x12 inch in summer. MICHIGAN.

Answer.—Your management, as stated, appears correct. Perhaps the weather, moisture, etc., have not been propitious in the years that you mention. Perhaps, also, your colonies have too much drone comb and rear drones enough to use up the surplus. Examine your combs; see how much brood your bees rear in the spring months; see that they have enough honey to breed plentifully. If the queens do not fill the brood chamber with brood in May-June, perhaps you had better change them. Get Italian bees, if you make a change.

## Bees Fed in Cellar

Please tell me whether I should start my queen bees laying eggs for brood by beginning to feed them with honey in bottom feeder before taking them out of the cellar, say about three weeks, so as to have young bees hatching about the time I put them out, so as to prevent spring dwindling. WISCONSIN.

Answer.—I have never found it advisable to feed the bees in the cellar, except when they were short, and this with very dry food, preferably sugar candy or granulated honey.

When we feed bees to produce brood, there is very soon a great restlessness among the bees of the hive. As soon as the eggs begin to hatch, they want to go after water for the food which they give them. They stir about and many are lost.

It is perhaps not always so, for I have heard the late Mr. Hall, of the Province of Ontario, assert that his bees always came out of the cellar in fine shape and with hatching brood. But if you wish to try it, better do it only on one or two colonies, as an experiment. If your bees had good honey when put into the cellar, they should not have spring dwindling, if taken out only when the weather is so that they can fly regularly.

## Crimson Clover

Is crimson clover a good honey plant? ALABAMA.

Answer.—Crimson clover is not grown in the North, but it is reported in Pellett's "American Honey Plants" as of good yield in the South. Bonnier, in France, gives it third place as a honey yielder, and the British Bee Journal states that it is about on a par with buckwheat. It is listed by Niswonger as more important than white clover, in Kentucky.

## Winter Losses

Lawrence County, Pennsylvania, lost 90 per cent of her bees the last winter, and as yet we have found no market in which to purchase an adequate supply till too late in the season for any honey. The honey seemed to granulate in the hives and the bees actually starved with ample stores in each box. Packing, winter protection of every kind used was seemingly of no avail.

The colonies that came through the winter best were in old-fashioned high boxes. I have looked at but one of them thus far that had no living bees in, and modern boxes by the hundreds can be examined in every direction full of dead bees and granulated honey. Our white clover harvest was very light in honey production, yet the wild flowers, berries and fruit bloom seemed to produce well for the bees, and there was abundance of buckwheat as well.

Strong colonies and weak, packed and unpackd hives, hives long in stores and hives short in stores alike died, and the same story is read every time I open a new box. Granulated honey. What is our trouble? How can we avoid it next year. PENNSYLVANIA.

Answer.—This is additional evidence that the standard Langstroth hive is too shallow, since deep hives have not perished. Buckwheat honey is condemned in many places, because of its giving the bees diarrhea in long confinements. But this is one of the few instances where it was reported to granulate enough to do damage. We have never had any losses here in the West from granulated honey, the bees apparently managing to consume it without trouble.

Under the circumstances, I would recommend that the buckwheat honey be eliminated from the brood-chamber by extracting it and giving better honey or sugar syrup in its place.

### Color of Honey

Will you kindly tell me the color and quality of the honey produced by the Russian olive? W. VIRGINIA.

Answer.—The Russian olive (*Eleagnus hortensis*) is a comparatively new thing in this country. Although the bees work freely upon it, we know nothing of the color of its honey, or its quality. Can anyone tell us?

### Moths

What is the best way to treat combs for moths? I see in your magazine C. C. Miller treats with carbon disulphide. I think we could put one box on top of another and have it airtight. Would this carbon disulphide on top of the brood not hurt the brood? I see another by E. L. Mall, Michigan, that way to treat would cost some. I want the cheapest way. Let me know and oblige.

I lost some bees this winter. I think I kept them too warm. I want to use the broodnest again, for they are in good shape, and I thought I would try it, if it don't hurt. S. DAKOTA.

Answer.—Either of the methods you mention is good to destroy moths. We would give the preference to that of Mr. Pangburn, on page 90 of the March number. But Dr. Miller succeeds well. As to the disulphide hurting the brood, all that needs to be done is to air the combs a little while before using them in a hive. It will have no bad effect upon the brood. Of course you should not use it "on top of the brood nest," when the bees are in it. It would kill both bees and brood.

Combs of hives in which bees have died will be all right to use in the summer, if they have no foulbrood in them.

### Wild Bees

1. Is a colony of wild bees in the roof of a building worth saving?

2. Can it be hived without building a scaffold and tearing off the weatherboards, as the entrance is high up under the eaves? If so, what is the best way to do it? NEW JERSEY.

Answers.—1. A colony of bees in the roof of a building may be as valuable as any other, when once brought down into a hive. There is no such thing as a colony of *wild* bees, since all bees are wild if allowed to swarm and get away.

2. As to the hiving of them without building a scaffold, we cannot tell. Perhaps one could get at them with less trouble or expense from the inside of the building, even if a little plaster had to be torn off. If they are likely to be among the rafters, it will be necessary to tear the wall on the inside. They may be easily taken out, hived and carried out of the house at night after they have gone in and quieted down.

If you are not accustomed to handling bees, better get an expert, with a bee smoker, to help you out. There is no need of getting stung, and the colony will be worth the expense, after they are hived.

### Straight Combs—Deep Frames

1. An old beeman said you can put sheets of building paper between the frames in a hive and the bees will build straight comb. Can that be done, and what is the result?

2. Is a 16-inch brood-chamber too deep? I have a home-made hive 22x13x16 in. deep; it seems large to me.

3. Will bees work just as well with the frames crosswise of the entrance as to have them lengthwise of the hive, with bee entrances at the end? IOWA.

Answers.—1. If you were to put a swarm in a hive with sheets of building paper between all the frames, the bees might build combs in each of those frames, but the likelihood is that they would swarm out of that hive and hunt for a more convenient home. But some combs might be secured by that method. But it is much better to use guides of comb foundation, or, still better, to use full sheets. It will pay.

2. A 16-inch brood-chamber would be too deep for convenient lifting out of the frames, when you wanted to inspect the colony. Better make it 13 deep and 16 long. But this is an odd size, and you will find it more profitable to use some standard size of frame.

3. Yes, the bees will work just as well with the frames crosswise, although beekeepers prefer, as a rule, to have them lengthwise.

### Moving Cells; How and When

1. Which is the best way to rear young queens in upper stories with a special opening at the back? Supposing that I would have 25 or 30 cells nearly ready to hatch, how could I dispose of those cells by putting one in each upper story; should there be some brood put up in these upper stories, or if there is some already should it be removed completely?

2. Another thing I want to know, should it be done during a honey flow? QUEBEC.

Answers.—1. There must be a queen excluder between the stories and it is better that there should be brood in the super where the young queen is to hatch. Brood ready to hatch is best. The old queen must be below.

2. All manipulations succeed best during a honey flow. If there is a scarcity, we can easily understand the bees do not care to rear a young queen, especially if the old one is still prolific.

### Bees Die in Cellar—Prices of Honey

1. Last fall I put my bees in my neighbor's cellar. I guess it must be too damp in there for them; anyway, one swarm is dead and an another is nearly so. The tops of the frames are all covered with brown spots and also the combs have these spots on them, and it has a bad smell, too. Do you think that this is dysentery?

2. Do you think that I could use these combs again in the broodnest or for extracting? The combs are mouldy on the bottom and have some dead bees in the cells.

3. Do you think that we will always get a fair price for our honey? Do you think that there will always be a good demand for it? MICHIGAN.

Answers.—1. Very likely that cellar is too damp. Perhaps it did not have enough ventilation. In such a cellar, it is advisable to place the hives on a shelf, as high up as possible. In any cellar, the hives that are nearest the floor fare the worst. We ascribe it to greater moisture there. Those brown spots are undoubtedly the discharges of the bees. Probably your honey was not of very good quality.

2. Yes, those combs can be used again. Place them in the center of a strong colony, one at a time, during the summer, and you will see how quickly the bees will cleanse them.

3. We will certainly not always obtain 30 to 60 cents per pound for honey, any more than the farmer will get 15 to 23 cents for hogs. But if the beekeepers organize, as many other industries do, there is no reason why we should not secure a fair price for our honey. In a country that consumes 80 pounds of sugar per head, it ought not to be difficult to sell from one to four pounds of honey per head. This would mean a great deal more honey consumed than we have ever produced. We will create the demand, if we try.

### Georgia Beginner

Georgia is my home State, and I am very much interested in the beekeeping industry. I have begun to do a lot of correspondence with the beekeepers to try and persuade them to organize a State Association. Suggestions from you will be greatly appreciated.

Answer.—The time is evidently ripe for a Georgia Association, for Mr. J. J. Wilder sent a call for a meeting, and the Georgia State Beekeepers' Association organized, at Waycross, July 3. An account of the meeting appears this month in our columns. Georgia is a good State for bees and there is no reason why a State association would not succeed there.

### Selling Honey

I have had some trouble in selling my honey, as there are other beekeepers who are better known and have a better trade than I have. Would it be advisable to advertise in the local weekly paper regularly or have a good-sized advertisement, changed in every issue, or would it be likely that the competitors would try and run in opposition to me? What is the best method to follow? WISCONSIN.

Answer.—"Advertise judiciously." That was the motto of a large advertising agency, and it is very good. You may spend a large amount of money in advertising and get no returns, if you don't do it "judiciously."

A very good way to advertise is to put a sign at your door, if you are along a traveled road. "Pure Honey for Sale," in large letters, will help dispose of a great quantity of honey, especially if you are along an automobile road A "local" in your weekly paper will do when you have the honey ready for the customer. Dr. Bonney is one of the best advertisers we know of, and every beekeeper who reads the bee papers has heard of "Bonney Honey." A display in the window of your grocer will prove very helpful. But when you sell honey, be sure and put it up in clean, attractive shape, so that your customers will come again.

### Honey Board for Wintering—Demaree Plan

1. I yesterday finished going through my colonies for the first time, and I found the litter in the chaff-trays unusually moist, when often formerly it was so dry that it could be put away with the trays for use next time. I prepared my colonies as follows: (1) Upon the frames, directly, an improved Hill device, consisting of a piece of wire netting about 12x12, secured to two sticks along ends and two sticks equi-distant between; the four sticks crosswise as to frames. (a) On this a piece of carpet;;(b) thereon chaff-tray (c) upon the latter the cover board as belonging to the colony. Among my colonies there are 30 with one winter case for each, and as with them there was not place inside enough to hold the cover of the hive—especially as to the so protected hives—it seemed well to me to put those coverboards also inside, and then on that the cover of the winter case. But in every case the cover boards were inside. Where I have not winter cases, I have double-walled hives. This has been an unusually severe winter. What I would like to ask about is, what you would think, in such a case as I have described above, of leaving the cover boards out of the hives or winter cases as well? Last fall I was afraid that without the cover boards it might not be warm enough inside of hives; now I question

whether with those cover boards left out there would have been a readier escape of moisture and thus not that wetness in the chaff. On the whole, wintering was pretty good. My loss is about 12½ per cent while in 1918 it was 25 per cent, also, after a severe winter; yet the season that followed was, with me, a record-breaker as well as an eye-opener of what might be achieved. It would seem that all the auspices for the coming season are good.

2. Here is another feature: Last year, of my 79 colonies, I gave 17 the Demaree method. Neither then nor the year before did it work well with me. Both times I put queen with one of two poor frames of brood with foundation under excluder (10 frames, and few 12 frames). Both seasons the bees did next to nothing down stairs, aside from fooling with that foundation. So, especially last year, I felt perplexed, and had strong misgivings as to what would result upon reducing, for winter, the Demareed to one story. There seemed to be bees enough, but they seemed to all reside up stairs. So I had to fabricate living conditions below, with what little brood there was, and frames of honey. Now I find that things come out O. K. Out of the 17 all but two are O. K., with brood and queen; also eggs. Such two dead are about in the same proportion as the loss as a whole. Yet I have my mind made up that I do not like such outcome of the Demaree, so I will do the Demareeing later, and then will try to the utmost not to use foundation below. I ask, then, how I had best make up the lower story with the queen under the excluder?

PENNSYLVANIA.

Answers.—1. The moist chaff in the trays indicates that the bees would have been in very damp condition if you did not use those trays, over the combs, as you did. A tight-fitting cover would have kept all that moisture in the brood-chamber. I would say that those bees were packed properly. The wonder is that you lost 12½ per cent. We call this a big loss, with packing similar to yours. Regarding what you call the cover board, if it is what is commonly called a honey board, it would be better to leave it out entirely till the chaff tray is removed in spring.

2. The Demaree plan is to put the brood above, leaving the queen with only one or two brood-combs below, with a queen excluder between. If that is the method you followed, the failure was probably due to a failure in the crop. With a strong colony, a comb of brood with the queen and the balance in foundation would be as good a plan as we could suggest, unless you have combs of worker cells already built, which would be still be better.

### How Many Eggs?

What is the maximum number of eggs that a queen will average per day for 21 days?

MISSISSIPPI.

Answer.—I'm not sure I can answer that. I think the number is greater than it was 50 years ago, and I suspect it will be still greater 50 years from now. Of course there is a great difference in queens, but as the maximum is desired we are supposed to take the best.

It may not be out of the way to estimate that such a queen under favorable circumstances will occupy 16 Langstroth frames during 21 days, figuring that the eggs will fill three-fourths of the inside measurement of the frame. Putting it in round numbers, it would not be far out of the way to say that the eggs would occupy 100 square inches, or 200 square inches when counting both sides of the comb. In 16 frames there would be 3,200 square inches. There are 28 13-15 worker-cells to the square inch, nearly 29. Call it 29 for convenience in figuring, and 3,200 times 29 will give us 92,800 cells filled by the queen in 21 days, or an average of 4,419 per day.

I do not vouch for the correctness of this answer, and if anyone protests it I am not ready to spill any blood in its defense. But please remember that this is figuring on utmost possibilities, and it is possible that no queen has actually achieved the figures given.

### Increase

When may be the time of the year to increase bees to the best advantage?

I have 40 colonies now and wish to increase to 150 as soon as possible. WISCONSIN.

Answer.—The best time to increase your colonies is during the honey crop. By making artificial divisions, keeping all colonies breeding, buying queens and supplying the colonies with comb foundation in full sheets, you might, in a very good season, succeed in making the amount of increase that you mention. But to be safe it is better not to try to more than double your colonies in any one season. This is the advice of all teachers in beekeeping. Get good books and post yourself. You will find it profitable.

### Book Review

"Productive Small Fruit Culture," by F. C. Sears, is the latest addition to the Lippincott series of farm manuals. Beekeeping and fruit growing is a combination which has proved ideal for many of our readers. This volume treats strawberries, raspberries, blackberries, currants, gooseberries and grapes with full directions for their culture. The author is Professor of Pomology in the Massachusetts Agricultural College and a well-known authority on fruit growing. The book contains 368 pages, well illustrated, and sells at $2.50. It may be obtained from the J. B. Lippincott Co., of Philadelphia, or at this office.

**HONEY** **WANTED** **HONEY**

Send us a sample of your honey if extracted, state how put up and your price. We are also buyers of comb, can use unlimited quantities if quality and price are right.

*We remit the same day goods are received*

**C. H. W. WEBER & CO., Cincinnati, Ohio**

**The Diamond Match Co.**
(APIARY DEPT.)
MANUFACTURERS OF
**Beekeepers' Supplies**
CHICO, CAL., U. S. A.

**Dadant's incomparable Foundation is always kept in stock. Western Beekeepers can be supplied advantageously.**

BEEKEEPERS, wherever they may be located, before deciding where to obtain supplies, should write to The Diamond Match Co. for prices, and for their Beekeepers' Supply Catalogue.

This Company are the largest manufacturers in the world who make Bee Supplies. They own their own timber lands, mills and factories, and supply goods direct from the tree to the beekeeper.

Full advantage of this low cost of production is given to the purchaser.

The Apiary Department (which is in charge of experienced supply men, who are also practical beekeepers) maintains a constant excellence of product and offers unsurpassed service.

**The Diamond Match Co.**
Aplary Department CHICO, CAL., U. S. A.

**The Eastern New York Beekeepers' Association**

The Eastern New York Beekeepers' Association will hold their fifth annual mid-summer meeting and basket picnic at the home apiary of Mr. Augustus Sweet, near West Berne, Albany County, N. Y., on Saturday, August 7, at 10 a. m.

S. DAVENPORT, Sec.-Treas.
Indian Fields, N. Y.

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Serviceable tires are reconstructed in our factory by our own dependable process and guaranteed for 6,000 miles. Unequalled in price, quality and workmanship.

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| 31x3½ | 6.65 | 1.75 | 35x4½ | 10.90 | 3 05 |
| 32x3½ | 6.90 | 1.90 | 36x4½ | 11.40 | 3 30 |
| 31x4 | 7.90 | 2.15 | 35x5 | 12.40 | 3.40 |
| 32x4 | 8.15 | 2.30 | 36x6 | 12.60 | 3.55 |
| 33x4 | 8.40 | 2.40 | 37x5 | 12.65 | 3.65 |

**Tubes Guaranteed Fresh Stock** In ordering state whether S. S. Clincher, plain or non-skid. Take 5 per cent discount from above prices for cash with order, or send $2 deposit on each tire and $1 on each tube, balance C. O. D. Tires shipped immediately subject to examination. ORDER TODAY.

**Serviceable Tire Corp., 171 E. 33rd St., Chicago**

## CLASSIFIED DEPARTMENT.

Advertisements in this department will be inserted for 5 cents per word, with no discounts. No classified advertisements accepted for less than 35 cents. Count each initial or number as one word.

Copy for this department must reach us not later than the 20th of the month preceding date of issue. If intended for classified department it should be so stated when advertisement is sent.

### BEES AND QUEENS

See Atwater's classified honey adv't.

GOLDEN and 3-banded queens in reasonable quantities by return mail; 1, $2; 6, $10.
Allen Simmons, Claverack, N. Y.

TENNESSEE 3-band Italians, reared from the best mothers and mated to select drones, they are vigorous and prolific. Pure mating and safe arrival guaranteed. Each, $1.25; 6, $7; 12, $12.
Wm. F. Morris,
Hendersonville, Tenn.

FOR SALE—Select golden Italian queens by return mail. Untested, $1.50 tested, $2.50.
Wallace R. Beaver, Lincoln, Ill.

FOR SALE—Untested golden Italian queens, $1.25; tested queens, $2.50; hybrids, 40c.
J. F. Michael, Rt. 1, Winchester, Ind.

FOR SALE—Goldens that are true to name. Select untested, one, $1.50; six, $7.50; 12, $13.50; 50, $55; 100, $100.
Garden City Apiaries, San Jose, Calif.

NUCLEI of Italian bees, with queens; 2-frame nucleus, $5.50; 3-frame, $6.75.
Frank Bornhoffer Mt. Washington, O.

QUEENS OF QUALITY—Our Hand-Moore strain of three-banded Italians are beautiful and good honey gatherers. Bred strictly for business. Untested, $1.50; half doz., $8; select,, $2.
W. A. Latshaw, Clarion, Mich.

FOR SALE—Full colonies of bees (with Italian queen), in 10-frame Root Co. hives, $14 each, 2 for $27.
Joseph Harrison,
White Pigeon, Mich.

FOR SALE—Select northern leather-colored Italian queens, carefully bred for utility, Untested, $2; tested, $3;; nuclei, $2. Guaranteed pure.
E. J. Fishhaber,
1320 Genesee Ave., Saginaw, Mich.

QUEENS, ITALIAN QUEENS—I will have about 100 untested queens a month surplus, for June, July and August. Who wants them at $1 each? Less than 100, $1.25 each.
W. H. Moses, Lane City, Texas.

FOR SALE—Queens of Dr. C. C. Miller strain, untested, $1.50 each, $15 per dozen; tested, $2 each, $22 per dozen. Safe delivery and satisfaction guaranteed.
Geo. A. Hummer & Sons,
Prairie Point, Miss.

NOTICE—No more queens or bees for sale this season.
Robert B. Spicer.
Wharton, N. J.

FOR SALE—Highest grade 3-banded Italian queens, ready June 1. Queens and drone mothers are selected from stock of proven worth in hardiness, gentleness, honey production and disease resisting qualities. Untested, each, $1.25; 6, $6.50; 12, $12; 50, $47.50; 100, $90. Your correspondence will receive prompt attention, and I guarantee satisfaction.
A. E. Crandall, Berlin, Conn.

WHEN BETTER QUEENS are raised Victor will raise them. Italians, mated, $1.25 each; six. $7; twelve, $13.50.
Julius Victor, Martinsville, N. Y.

FOR SALE—Large, hardy, prolific queens. 3-banded Italian only. Pure mating and safe arrival guaranteed. One queen, $1.30; 6, $7.50; 12, $13.50; 100, $110.
Buckeye Bee Co., Box 443, Massillon, Ohio.

FOR SALE—Pure Italian queens. Select untested, 1, $1.50; 6, $7.50; 12, $13.50; 50, $55; 100 and over, each $1. Also packages and nuclei.
Golden Star Apiaries, San Jose, Cal.

BOZZALLA LIGURIAN QUEENS—Obtain your queens from Italy. We take the risk of death in the mail. Select tested Italian queens posted direct from Enrico Bozzalla's apiaries to the customer, $3.50 each. Remit to sole agent, H. M. Stich, Riccartsbar Ave., Paisley, Scotland.

FOR SALE—My famous three-banded Italian queens, $1.25 each, six for $7, from June 1 to November.
J. W. Romberger, Apiarist,
3113 Locust St., St. Joseph, Mo.

QUEENS—Italian queens of excellent stock will be ready to mail June 1. Untested. $1.50 each; 6, $7.50; 12, $14.
J. D. Harrah, R. No. 1, Freewater, Ore.

FOR SALE—Italian queens that will give results; untested, $2; tested, $3; breeders, $10.
A. Beyer, Krotz Springs, La.

BOOK YOUR ORDERS for QUEENS now—Goldens, $2; tested, $3; banded, $1.50; tested, $2.50; six or more 10 per cent less.
Clover Leaf Apiaries, Wahoo, Neb.

FOR SALE—Italian queens. Prices for untested, in June, $1.50 each, $8.25 for six, $16 for twelve; tested, $2.50 each from July 1 to October 1; untested, $1.25 each, $7 for six, $13.50 for twelve; tested, $2 each; Virgins, 75c each. Mismated queens will be replaced if returned in 30 days. Dead queens will be replaced if returned to me by return mail.
R. B. Grout, Jamaica, Vt.

FOR SALE—Hardy Italian queens, $1 each
W. G. Lauver, Middletown, Pa.

FOR SALE—Superior California Queens—Western beekeepers may now secure our famous Italian queens at the following prices: One untested, $1.25; fifty untested, $57.50; one hundred untested, $100. Orders filled in rotation; first deliveries March 1, 1920.
Edson Apiaries, Gridley, Calif.

FOR SALE—Golden and three-band queens. Untested, April, May and June delivery. $1.25 each; $12.50 per doz. Satisfaction.
R. O. Cox, Rt. 4, Greenville, Ala.

FOR SALE—3-banded Italian queens from best honey-gathering strain obtainable; (no disease). Untested queens, $1.25 each; 6, $6.50; 12, $12. Select untested, $1.50 each; 6, $9; 12, $18. Tested, $2.50 each. Safe arrival and satisfaction guaranteed. Your orders filled promptly.
W. T. Perdue & Sons,
R. No. 1, Fort Deposit, Ala.

MOTT'S Northern Bred Italian Queens—I have breeding mothers place in the south for April and early May queens. Plans "How to Introduce Queen and Increase," 25c. If you want beauty with the best of summer and winter laying birds, try a setting of my Golden Campines.
E. E. Mott, Glenwood, Mich.

FOR SALE—Leather colored Italian queens, tested, until June 1, $2.50; after, $2; untested, $1.25; $13 per dozen. Root's goods, Root's prices.
A. W Yates,
15 Chapman St., Hartford, Conn.

FOR SALE—3-banded Dr. Miller and Walker's queens after June 10. (Am booked full until then.) $1.25 each, 6 for $7, 12 for $13; selects, 25c each higher.
Curd Walker, Jellico, Tenn., R 1, Box 18.

FOR SALE—A. I. Root strain of resisting and honey-gathering, leather-colored Italian queens. Untested queens, $1.50 each, 25 or more $1.40. Tested, $2.50 each, 25 or more, $2.25. Select tested, $3. For larger amounts write.
A. J. Pinard, Morgan Hill, Calif.

1920 PRICES for "She Suits Me" queens. Untested Italian queen, from May 15 to June 15, $1.50 each. After June 15, $1.30 each; $12.50 for ten; $1.10 each for 25 or more.
Allen Latham, Norwichtown, Conn.

FOR SALE—After April 15, our golden Italian queens, untested, one $1.50 or $15 per doz.; select untested, one, $1.75 or $18 per doz.; tested, $3 each. Safe arrival guaranteed.
Tillery Bros.,
R. 5, Georgiana, Ala.

BEES AND QUEENS from my New Jersey apiary.
J. H. M. Cook,
1Atf 84 Cortland St., New York City.

"QUALITY" THREE-BANDED ITALIANS from excellent stock; untested queens, 1, $1.50; 6 for $7.50; 12 for $13.50; 50 for $55; 100 for $100.
N. J. James,
1185 Bird Ave., San Jose, Calif.

BEES BY THE POUND, ALSO QUEENS—Booking orders now. Free circular gives prices, etc. See larger ad elsewhere.
Nueces County Apiaries, Calallen, Texas,
E. B. Ault, Prop.

### HONEY AND BEESWAX

See Atwater's classified honey adv't.

WANTED—Honey extractor, 2-frame reversible 9⅝x16. State kind, condition and price.
W. F. Tilton, Kansas City, Mo.

WANTED—Extracted and comb honey in bulk or tin, or glass jars; also maple syrup.
Paul Thomae 1131 3rd St., Milwaukee, Wis.

GRANULATED HONEY ADS, $1 per thousand; 100, 20c.
Dr. Bonney,
Buck Grove, Iowa.

FOR SALE—Finest Michigan raspberry, basswood and clover No. 2 white comb, $5.50 per case; No. 1, $6; fancy $6.50; extra fancy, $7; 24 Danz. sections to case. Extracted, 60-lb. cans, 25c per pound.
W. A. Latshaw, Clarion, Mich.

WANTED—No. 1 clover extracted honey.
E. Strudel, 1451 Richard St., Milwaukee, Wis.

FOR SALE—About 40,000 lbs. fancy white clover honey; price f. o. b. Kalona, Ia., case, 2 60-lb. cans, 22 cents a pound; case 1 60-lb. can, 23 cents a pound. Sample bottle by mail, 20 cents
J. M. Gingerisch, Kalona, Ia.

WANTED—Beeswax. At present we pay 38 cents per pound in cash and 40 cents in trade for clean, yellow wax, delivered Denver.
The Colorado Honey Producers' Association,
Denver, Colo.

HONEY—Supply your customers, finest alfalfa-clover honey, extra strong cases, probably ready in July.
E. F. Atwater, Meridian, Idaho.

WANTED—Extracted honey. State how packed. Send sample, lowest cash price.
P. Outzen, White Bear Lake, Minn.

FOR SALE—Clover and buckwheat honey in any style container (glass or tin). Let us quote you.
The Deroy Taylor Co.,
Newark, N. Y.

WANTED—White clover or light extracted honey. Send sample; state how honey is put up and lowest cash price delivered at Monroe; also buy beeswax.
E. B. Ross, Monroe, Wis.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendering. Fred W. Muth Co.,
204 Walnut St., Cincinnati, Ohio.

WANTED—Comb and extracted honey.
The L. H. Snider Apiaries, Auburn, Ind.

## FOR SALE

See Atwater's classified honey adv't.

FOR SALE—100 cases 15-ounce honey jars, 2 dozen to the case, $1.25 per case.
C. E Dustman, Watertown, Minn.

FOR SALE—Silver Spangled Hamburg chickens; best layers on earth.
Elias Fox, Union Center, Wis.

FOR SALE—Root's 8-frame power extractor (12-inch pockets); Peterson capping melter separating can, and Root's steam heated uncapping knife, with copper boiler; have never been used. Arthur J. Schultz, Ripon, Wis.

FOR SALE—25 colonies in standard 2-story hives, located at Fairhope, Ala.
M. Michaels, Loraine, Wis.

FOR SALE—Cedar or pine dovetailed hives; also full line of supplies, including Dadant's foundation. Write for catalog.
A. E. Burdick, Sunnyside, Wash.

FOR SALE—"Superior" Foundation (Weed process). Quality and service unexcelled.
Superior Honey Co., Ogden, Utah.

## SUPPLIES

See Atwater's classified honey adv't.

FOR SALE—Good second-hand double-deck comb honey shipping cases for 4¼x4¼x1⅞ sections, 25 cents per case, f. o. b. Cincinnati; terms cash with order.
C. H. Weber & Co.,
2146 Central Ave., Cincinnati, O.

FOR SALE—Good second-hand empty 60-lb. honey cans, two cans to the case, at 60c per case, f. o. b. Cincinnati. Terms cash with order. C. H. Weber & Co.,
2146 Central Ave., Cincinnati, O.

SEND us a list of goods wanted and will quote you lowest prices. We are the money-saving house. Price list free. Try us.
H. S. Duby & Son, St. Anne, Ill.

## WANTED

See Atwater's classified honey adv't.

WANTED—High grade extracted honey; also high grade section honey in 4x5 size.
Merton Church, Highland Park, Ill.

WANTED—Medium size extractor; must be in perfect condition.
Robert Evershed, Irondequoit, N. Y.

WANTED—Several Banat queens, quickly.
Mack Wilmer, Honey Creek, Wis.

WANTED—Your old combs, cappings and slumgum to render into beeswax. We get enough more wax with our well equipped presses to pay for our work.
Dadant & Sons, Hamilton, Ill.

WANTED—Your order for "Superior" Foundation. Prompt shipments at right prices.
Superior Honey Co., Ogden, Utah.

## SITUATIONS

See Atwater's classified honey adv't.

WANTED—All year round position with bees, preferably near New York. Moderate salary with opportunity for advancement desired.
Daniel B. Hotaling, Chautauqua, N. Y.

WANTED—Beeman, immediately. Must be steady and industrious. Can give steady employment. Give full particulars and wages desired in first letter.
W. J Stahmann, Clint, Texas.

WANTED — An experienced beeman and helper; will pay to suit right parties; want them as soon as possible.
F. B. P., care American Bee Journal.

WANTED—One or two good queen-rearing men to begin work February 15, 1921.
Nueces County Apiaries, Calallen, Texas.

WANTED—One experienced man, and students or helpers, in our large bee business; good chance to learn. Modern equipment and outfit, including auto truck; located near summer resorts. Write, giving age, height, weight, experience, reference and wages wanted.
W A. Latshaw Co., Clarion, Mich.

## MISCELLANEOUS

See Atwater's classified honey adv't.

WILL EXCHANGE 5 passenger Maxwell car, 1912 model, in good running condition, for bees or honey. Harry Brown,
Vermont, Ill.

WRITE for shipping tags and our prices for rendering your old combs, cappings, etc. We guarantee a first-class job.
The Deroy Taylor Co., Newark, N. Y.

BLACK SIBERIAN HARES—Enormous sizes, delicious meat and beautiful fur. Write for information and prices.
Siberian Fur Farm, Hamilton, Canada.

BEE SUPPLIES

We carry a complete stock of supplies at all times, and can make prompt shipments. Our prices will interest you.

Send Us Your Inquiries

A. H. RUSCH & SON CO.
Reedsville. Wis.

**Statement of the Ownership, Management, Circulation, Etc., required by the Act of Congress of August 24, 1912, of American Bee Journal, published monthly at Hamilton, Illinois, for August, 1920:**

STATE OF ILLINOIS, ss.
COUNTY OF HANCOCK.

Before me, a Notary Public, in and for the State and County aforesaid, personally appeared V. M. Dadant, who having been duly sworn according to law, deposes and says that she is the Business Manager of the American Bee Journal, and that the following is, to the best of her knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in Section 443, Postal Laws and Regulations, printed on the reverse side of this form, to-wit:

1. That the names and addresses of the publisher, editor, associate editor, managing editor and business managers are:

Publisher, American Bee Journal, Hamilton, Ill.

Editor, C. P. Dadant, Hamilton, Ill.

Associate Editor, Frank C. Pellett, Hamilton, Ill.

Managing Editor, M. G. Dadant, Hamilton, Ill.

Business Manager, V. M. Dadant, Hamilton, Ill.

2. That the owners are:

C. P. Dadant, Hamilton, Ill.
H. C. Dadant, Hamilton, Ill.
V. M. Dadant, Hamilton, Ill.
Leon Saugier, Hamilton, Ill.
L. C. Dadant, Hamilton, Ill.
M. G. Dadant, Hamilton, Ill.
Jos. Saugier, Hamilton, Ill.

That the known bondholders, mortgagees and other security holders owning or holding 1 per cent or more of the total amount of bonds, mortgages or other securities, are: None.

(Signed) VALENTINE DADANT.

Sworn to and subscribed before me this 8th day of July, 1920.
MARY McCOY, Notary Public.
My commission expires January 17, 1924.

BEE SUPPLIES
FALCON LINE

Best goods made. Get our big discount sheet before buying.

C. C. CLEMONS BEE SUPPLY COMPANY
128 Grand Ave.
Kansas City Mo.

WANTED—Beekeeper for apiary at Lilly Orchard; married man able to grade and pack fruit preferred. Come and get a job during apple picking and size up the location. Can give work in orchard when not busy with bees.
H. W. Funk, Normal, Ill.

QUEENS OUR ITALIAN QUEENS
GOLDEN AND THREE-BANDED STRAINS

The demand for our Famous Disease-Resisting, Hardy, Long-Lived Honey-Gathering Strains is greater than ever before. Send for descriptive circular and price list. Book your order now and assure the prompt delivery of queens when wanted.

CLEANING UP DISEASE

"The six queens purchased of you arrived and are doing better than any other queens we ever had. We bought three dozen from another breeder and introduced foulbrood with them. The introduction of your queens in six of these colonies stamped out the disease." Buffalo, N. Y. (Name on request.)

HARDINESS AND HONEY GATHERING

"The 25 colonies of bees purchased of you, although only one mile from Lake Erie, and therefore exposed to high, cold winds, in fact this is the windiest place along the Great Lakes, wintered with only insignificant loss. As for honey, they averaged 175 pounds each of surplus, did not swarm, and gave an artificial increase of 39 per cent, which is as fine a record as can be had in this locality, especially when the work is done entirely by amateurs." North East, Pa. (Name on request.)

Untested queens, guaranteed to be purely mated. Price $1 each, or $90 per 100; select, $1.25 each, or $110 per 100. Small orders filled by return mail. Wings clipped free.

M. C. BERRY & CO., Hayneville, Ala., U. S. A.

EXTRACTING BEE-MEN WANT "Falcon" QUEENS

WE spare no pains in giving our patrons the best bred queens. Good queens are vital to the success of a honey crop and to building up, strong "producing" colonies.

*Price List of* **"Falcon"** *Three-banded Italian Queens*
*July 1 to October 1*

| | 1 | 6 | 12 |
|---|---|---|---|
| Untested | $1.80 | $ 9.90 | $18.00 |
| Select Untested | 2.00 | 11.10 | 20.00 |
| Tested | 2.50 | 14.40 | 29.00 |
| Select Tested | 3.00 | 17.40 | 33.60 |

WRITE FOR OUR RED CATALOG

**W. T. FALCONER MANUFACTURING COMPANY**
Falconer (near Jamestown) N. Y., U. S. A.

*"Where the best Bee-Hives come from"*

**FOR SALE** On the following list of goods you can make a saving of from 20% up, if you act promptly

**Shipping Cages for Pound Bees—New**

| | |
|---|---|
| 1500 1-lb packages, complete $ .40 | 60 1-lb. packages, nailed, not screened .30 |
| 470 2-lb. packages, complete .52 | 500 2-lb. packages, nailed, not screened .40 |

140 3-lb packages, complete .75

These are the packages recommended by the Texas Beekeepers' Association.

**Queen Rearing Nuclei**

975 Standard 4-frame nuclei, Hoffman frame, nailed and painted, at $1. 140 8-frame hives divided in the center, N. P., at $2. 45 10-frame hives divided in 2 and 3 parts, at $2.10

**10-Frame Hive Bodies**

110 10-frame hive bodies, empty, N. P., at 80c. 150 10-frame hive bodies, with foundation, N. P., at $2.20. 40 10-frame hive bodies, with wired frames, N., at $1.30. 10-frame covers, N. P., at 72c. 10-frame bottoms, reversible, N. P., at 60c. 8-frame telescope metal roof covers, N. P., at $1. 10-frame bottoms in flat at 50c. 350 10-frame excluders at 55c and 65c. Medium brood foundation, Dadant's, 67c per lb. Light brood, 70c per lb. Thin surplus for shallow frames, 72c per lb. Write for further information and bargains.

**W. J. FOREHAND & SONS, FORT DEPOSIT, ALA.**

PURE ITALIAN QUEENS

The old reliable three-banded stock bred strictly for business. My select untested are laying before being caged. Price after August 1, $1.50, 12 or more $1.25 each. Tested $2.00, breeders $5.00. Circular free.

**J. E. WING, San Jose, Calif.**

155 SCHIELE AVENUE

QUINN'S QUEENS OF QUALITY

Have no superiors—"There's a reason." Are Mendelian bred, good qualities accentuated. Gray Carniolans, Gray Caucasians, most gentle of all, prolific, hardy, vigorous, disease-resistant, white comb builders—they deliver the goods.

ITALIANS, 3-banded, line bred, pedigreed; need no boosting; they speak for themselves.

**CHAS. W. QUINN, Sabot, Va.**

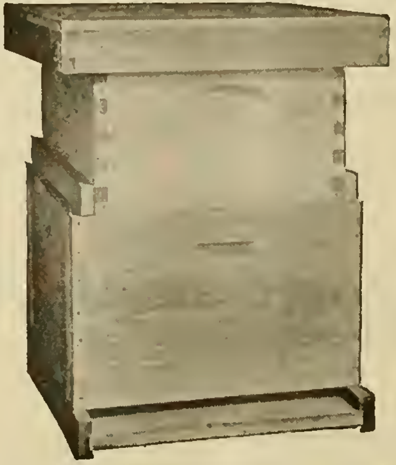
HONEY FINEST Michigan Raspberry, Basswood and Clover comb and extracted honey. Unexcelled for quality.

| | |
|---|---|
| Crate 6 cases 24 sec. Fancy Comb | $39.00 |
| Crate 6 cases 24 sec. A No. 1 Co'b | 36.00 |
| Crate 6 cases 24 sec. No. 2 Comb | 33.00 |
| Crate 6 cases 24 sec. Extra Fancy | 42.00 |
| Two cans 120 lbs. Extracted | 30.00 |

*Send Today for Free Somple*

**W. A. LATSHAW COMPANY, Clarion, Michigan**

MODIFIED DADANT HIVE



Glance at this illustration to compare this hive with "Standard" Langstroth hive.

Your present brood equipment can be put above the Modified Dadant hive used as full-depth supers.

You get 40 per cent greater brood-comb area than in the "Standard" ten-frame Langstroth.

You get deep frames, large one-story brood-nest, frame space ventilation, excellence in wintering, swarming easily controlled.

**MODIFIED DADANT HIVE FEATURES**

1. Eleven frames, Langstroth length, Quinby depth.
2. Frames spaced 1½ inches for swarm control.
3. Extracting frames 6¼ inches deep.
4. Dovetailed body, regular reversible bottom and metal roof cover with inner cover.
5. Langstroth "Standard" equipment easily used with this hive.

**For free booklet write any distributor of Lewis "Beeware," or to**

**G. B. LEWIS COMPANY, Watertown, Wisconsin**
**DADANT & SONS, Hamilton, Illinois**

CHARLES MONDENG
Bee Keepers' Supply Mfg. Plant.

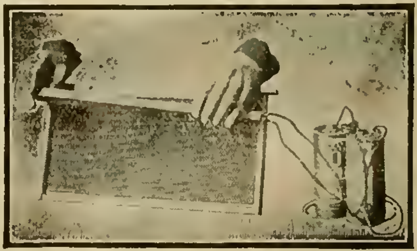
BEE SUPPLIES

The largest and oldest Bee Supply manufacturer in Minnesota can offer you BEE WARE that will keep that "satisfied smile" on your face. Excellent quotations given on frames, spacing or unspacing. Write to MONDENG about hives and supers. Made of polished white pine.

A word to the wise is usually—RESENTED?
Send for my 1920 Catalog and Price List.
LOOK for the best bargains I've presented.

**Will take your Beeswax in Trade at Highest Market Price**

**CHAS. MONDENG**
**159 Cedar Lake Road MINNEAPOLIS, MINN.**



ELECTRIC IMBEDDER

**Price without Batteries $1.25**
Not postpaid.

Actually cements wires in the foundation. Will work with dry cells or with city current in connection with transformer. Best device of its kind on the market.

**For sale by all bee supply dealers**

Dadant & Sons, Manufacturers HAMILTON, ILL.

**EARLY ORDER DISCOUNTS WILL**

**Pay You to Buy Bee-Supplies Now**

Thirty years' experience in making everything for the beekeeper. A large factory specially equipped for the purpose ensures goods of highest quality. Write for our illustrated catalog today.

**LEAHY MFG. CO., 90 Sixth St., Higginsville, Mo.**
**or J. W. ROUSE, Mexico, Mo.**

PAT JULY 30, 1918

C.O.BRUNO NAILING DEVICE

*Made for the Huffman Brood Frames.* A combined Nailing, Wiring and Wedge Clamping Device. Has been tried and is guaranteed to do accurate work.

PRICE $7.50

Complete directions for operating are furnished with each device.

Manufactured by C. O. BRUNO
1413 South West Street, Rockford, Illinois

## PRICES OF QUEENS

| | Nov. 1 to June 1<br>1 | 6 | 12 | June 1 to Nov. 1<br>1 | 6 | 12 |
|---|---|---|---|---|---|---|
| Untested | $2.00 | $9.00 | $16.80 | $1.50 | $8.00 | $14.50 |
| Select untested | 2.25 | 10.50 | 18.00 | 2.00 | 9.50 | 16.00 |
| Tested | 3.00 | 16.50 | 30.00 | 2.50 | 12.00 | 22.00 |
| Select tested | 3.50 | 19.50 | 36.00 | 3.00 | 16.50 | 30.00 |

**Breeders $7.50 to $15.00**

Queens for export will be carefully packed in long-distance cages, but safe delivery is not guaranteed.

"The queen that I got from you last season made honey when the other bees were taking lunch to the fields with them (when they went at all)". H. M. TICHENOR, Centertown, Ky.

2058 Yonge St., Toronto Canada March 19, 1920.

Friend Davis:

The colonies headed by your queens are through this far in fine shape. It was a pleasing sight to see them take their first flight (after 4 months) this last week. What is the price of queens to us folks on this side this year, and when could you start to send me up some? A reply would oblige Yours Respectfully,

P. F. OLIVER.

**No Nuclei, Full Colonies or Pound Packages.**

**BEN G. DAVIS, Spring Hill, Tenn.**

---

# MARSHFIELD GOODS

## BEEKEEPERS

We manufacture millions of **sections** every year that are as good as the best. The **cheapest** for the **quality; best** for the price. If you buy them once, you will buy again.

We also manufacture **hives, brood-frames, section holders** and **shipping cases.**

**Our Catalog is free for the asking**

**MARSHFIELD MFG. CO., Marshfield, Wis.**

---

# BEEKEEPER'S SUPPLIES

## QUALITY AND SERVICE

The honey flow is now on. Honey means Dollars to you; don't lose a pound of it by being short of Supplies. We carry a full line of Bee Supplies ready for prompt shipment to you—Hives, Frames, Supers, SECTIONS, Foundation, Extractors, Smokers, Comb Honey Shipping Cases, Tin Honey Cans and Pails. Our goods are ideal in quality and workmanship. Learn more about our goods by sending for our catalog.

**AUGUST LOTZ COMPANY, Boyd, Wis.**

---

# ITALIAN QUEENS

The Old Reliable Three-Banded Italians. The best allround bee to be had. Queens ready to mail April 1. Will book orders now. Will guarantee safe arrival in United States and Canada. Prices for April and May:

Untested,, $1.50; 6, $8; 12, $15
Tested, $2.25; 6, $12; 12, $22.
Select tested. $3 each.

Descriptive circular and price list free.

**JOHN G. MILLER,**
723 C Street, Corpus Christi, Texas.

---

# PORTER BEE ESCAPE SAVES HONEY TIME MONEY

PORTER
BEE ESCAPE
PATENTED

**For sale by all dealers.**
**If no dealer, write factory**
**R. & E. C. PORTER, MFRS.**
**Lewistown, Illinois, U. S. A.**

(Please mention Am. Bee Journal when writing)

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Send for Catalogue of Honey Labels and Stationery.
American Bee Journal

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# BEES

We furnish full colonies of Italian bees in double-walled hives. single-walled hives, shipping boxes and 3-frame nucleus colonies.

**I. J. STRINGHAM, Glen Cove, N. Y.**
**NASSAU, CO.**

---

# WESTERN BEEKEEPERS!

We handle the finest line of bee supplies. Send for our 68-page catalog. Our prices will interest you.

**The Colorado Honey Producers' Association, 1424 Market St., Denver, Colo.**

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Write for Price List and Booklet descriptive of

**HIGH-GRADE**
**Italian Queens**
**JAY SMITH**
**Route 3**
**Vincennes, Ind.**

## HERE THEY ARE MR. BEEKEEPER

**at Newark, Wayne Co., N. Y., ready to answer your call. The best of everything. Just read this list:** Lewis Beeware, Sections, Shipping Cases, Frames, Hives, Hershiser Wax Presses and other supplies, Dadant's Unexcelled Foundation, all standard weights and sizes; also the Electric Wire Imbedder, Bingham Uncapping Knives, including steam heated, with oil stoves and generators. Bingham Smokers, all sizes, with geunine leather bellows; Root's Extractors, all sizes of hand and power machines; Bee Books, written by all leading authors in beedom.

All sizes of Friction Top Pails, and also 60-lb. Cans, new and second hand. Also Cement-coated Nails for nailing beehives and supplies; and all sized spools of Tinned Wire, Bee Brushes, Feeders, Queen-Rearing Cages, Bee Gloves and Capping Melter, and all practical supplies you will need.

A market for your honey or wax and a plant to render your old combs and cappings.

Over 1,000 beekeepers took advantage of this service station at Newark in 1919 for the first time. Now all together for a greater 1920.

New catalog free. Our discounts will save you money.

**THE DEROY TAYLOR CO., Newark**
**(Wayne Co.) New York.**

## MR. BEE KEEPER

You desire your beekeeping to become successful. Then use the best methods and supplies available. These supplies are furnished by us in Dadant's Foundation and Lewis Bee Supplies.

Send us samples of your honey and quote your price.

**WESTERN HONEY PRODUCERS, SIOUX CITY, IOWA**

**Send list of your needs or request for new Catalogue to Department B.**

## ROOT GOODS—PROMPT SERVICE

**SHIPPING CASES**
**HONEY CONTAINERS**
**FOUNDATION**
**GLASS JARS**

**WERTZ SEED CO., SIOUX CITY, IOWA**

**ROOT DISTRIBUTORS—LET US SAVE YOU FREIGHT COSTS—GET OUR PRICES**

## QUEENS, SELECT THREE-BANDED ITALIANS

Reared from the best mothers and mated to select drones.

**Prices of Queens**

| | May 1st to June 1st | | | June 1st to July 1st | | | July 1st toNov. 1st | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 6 | 12 | 1 | 6 | 12 | 1 | 6 | 12 |
| Untested | $2.00 | $ 9.00 | $16.80 | $1.50 | $ 8.50 | $14.50 | $1.30 | $ 7.50 | $13,50 |
| Select Untested | 2.25 | 10.50 | 18.00 | 2.00 | 9.50 | 16.00 | 1.75 | 8.50 | 15.00 |
| Tested | 3.00 | 16.50 | 30.00 | 2.50 | 12.00 | 22 00 | 2.00 | 10.00 | 18.50 |
| Select Tested | 3.50 | 19.50 | 36.00 | 3.00 | 16.50 | 30.00 | 2.75 | 15.00 | 27.00 |

Orders booked now for May delivery. Pure mating, safe arrival and entire satisfaction guaranteed. Wings clipped free. Write for descriptive circular.

**HARDIN S. FOSTER, Columbia, Tenn.**

# Crop and Market Report

Compiled by M. G. Dadant

For our August report we asked reporters to answer the following questions: 1. How is the crop in your section? What will be the per colony average? 2. Have you sold any of your honey, and at what price. 3. Any offers?. 4. What do you expect to realize from your crop?

## THE HONEY CROP

Throughout the New England State the honey crop has been up to normal and part of the section claim a very poor crop, indeed. It was caused partly from the fact that bees were in such poor condition and there were such heavy losses, and partly because honey plants were not in the best condition for the flow.

In New York the conditions seem to be better, some sections reporting a very good crop, while others state there will hardly be a half crop. In this section the crop will be cut down a good deal in some localities by the prevalence of American foulbrood.

In Pennsylvania there will be a small crop, probably 25 per cent of normal, while Ohio seems to have a very fair crop, seeming much better than last year. Turning to the Southern States, we find that the crop, so far, has been about 50 per cent of normal, except in Louisiana, which claims the best year in four or five years, with an average of 100 pounds or more per colony. In Mississippi and Alabama the sweet clover flow was practically a failure and their honey will not amount to a great deal. Florida and Georgia have averaged about 30 to 35 pounds per colony, so far, but are expecting a better fall flow. In Texas the crop has been above normal and will probably reach 100 pounds per colony by the time the present flow is over. Around there the beekeepers are very well satisfied, indeed, and have been finding ready sale for their honey, thanks to their well equipped Association.

In Indiana and Illinois the flow has been better than expected, although nothing phenomenal. The average will probably be 30 pounds per colony, whereas nothing was expected, in most instances. In Michigan the flow is very good, but they are suffering from a lack of bees, owing to heavy winter losses last year and depleted condition of colonies. Wisconsin claims the best flow they have had for two or three years, with an average of 100 pounds per colony, or better. Minnesota is good, although hardly up to the flow in Wisconsin. In Iowa the conditions are somewhat spotted, the eastern part of the State resembling Illinois, whereas the western part is having an extremely good honey flow. In the sweet clover sections the average is said, in some instances, to run to 200 pounds per colony. The flow is also good in Kansas and Nebraska, and Missouri is having a very good flow in some sections, also.

It is a little early to estimate the crop in the Mountain section, although Colorado will probably have its ordinary crop cut down to some extent by the ravages to the alfalfa. It seems that they will hardly harvest as much honey as last year. Montana claims about the same thing, with about 75 per cent of normal. Idaho reporters figure that they will average 100 pounds per colony before the season is over and are very well pleased. Washington will also have an excellent flow, while Oregon will hardly have as heavy a flow, averaging from 50 to 75 pounds per colony. In Arizona the flow has been excellent, and in New Mexico, in most sections, it has also been very good, although cut down to some extent by the extremely heavy rains and floods.

California, to be last considered, has very conflicting reports. One reporter states he will have 125 to 150 pounds per colony, and another at least 100 pounds. The average of the reports, however, would indicate that the flow is about two-thirds of last year and that the average will be from 60 to 75 pounds per colony.

## HONEY SOLD

There has been very little honey of the new crop sold, except the orange honey in California and some from the southeast. California orange honey has been bringing from 19c to 21c and the honey from Florida, Georgia and other points has brought from 17c to 20c.

## OFFERS MADE

A large number of the reporters have stated they have been offered uniformly a price of 19c for white extracted honey and about 16c to 17c for amber. These offers seem to be in the nature of feelers, as buyers are not yet active in trying to get honey.

## PRICES EXPECTED

Not a reporter expected to get less than 20c per pound for white extracted honey, with comparatively a large number stating they would like to get 25c for extracted and 30c for comb. The strange thing about the reports is that the price expected on extracted and comb are so nearly the same.

We call attention to the excellent condition both in California, Colorado and Texas on honey prices, owing to the fact that the associations there are controlling a large part of the crop and handling the same so that the beekeepers will get the very best price obtainable. In Texas there was an inclination to throw the new honey on the market at once. This was averted by the association, and the honey has been going onto the market slowly, with the result that 50 per cent of the crop is already sold and the rest is moving excellently at very good prices, ranging from 16c to 21c for extracted.

Prices offered on California honey were, on July 8, as follows: Water white sage, 19½c; white sage, 19c; light amber sage, 18c; Hawaiian, 15½c. For opening prices these are considerably in advance of last year and would indicate that the associations are figuring on a better price for their members than a year ago.

In Colorado, of course, the association has not yet placed any prices on their stock, since the crop is not yet harvested. They will, however, as usual, get top-notch prices for their members.

The United States Department report is remarkable for one thing, and that is, that there is left but little honey in the large markets. Evidently the markets are pretty well cleaned up, owing to the shortage of sugar and the excellent demand for honey.

Sugar is still scarce, although getting more plentiful, and the wholesale price in New York has dropped from 28c to about 24c per pound.

**THREE BAND ITALIANS**
**TESTED DISEASE RESISTORS**

PRICES

| | June 15 to July 15<br>1 | 6 | 12 |
|---|---|---|---|
| Untested | $1.50 | $8.00 | $15.00 |
| Select untested | 1.75 | 9.00 | 16.00 |

| | July 15 to Oct. 1<br>1 | 6 | 12 | 100 |
|---|---|---|---|---|
| Untested | $1.30 | $7.50 | $13.50 | $110.00 |
| Select untested | 1.60 | 8.00 | 14.00 | 115.00 |
| Select tested, any time after June 20 | 3.00 | 16.00 | 29.00 | |
| Select day-old virgins, after June 1 | .60 | 3.50 | 6.50 | 50.00 |

**D. A. DAVIS, Birmingham, Mich.**
**216 Greenwood**

**BARNES' Foot Power Machinery**

Read what J. E. Parent, of Chariton, N. Y., says: "We cut with one of your Combined Machines last winter 50 chaff hives with 7-in. cap, 100 honey-racks, 500 frames and a great deal of other work. This winter we have a double amount of hives, etc., to make with this saw. It will do all you say of it." Catalog and price list free.

**W. F. & JOHN BARNES**
**995 Ruby St., ROCKFORD, ILLINOIS**

**Established 1885**

We are still furnishing beehives made of white pine; they will last. A. I. Root Co.'s make of bee supplies kept in stock. Send for catalog giving full particulars; free for the asking. Beeswax in exchange for supplies, or cash.

**JOHN NEBEL & SON SUPPLY CO.**
**High Hill, Montg. Co., Mo.**

ATTENTION, PACIFIC NORTHWEST BEEKEEPERS!

We handle a full line of supplies for beekeepers, including **Italian Queens.** Write us your requirements and for our Catalog A. It's **free.**

SPOKANE SEED CO.,
906 First Ave. Spokane, Wash.

**WHEN THE BEES STING**

YOU'LL NEED AN "IDEAL BEE VEIL"— TRUE TO ITS NAME

**$1.60 POSTPAID IN U. S. A.**

**HONEY**

Send us a sample of your extracted honey. We also buy comb honey. Tell us how much you have and what you want for it. We pay the day shipment is received.

**WAX—OLD COMB**

We pay you the highest market price for rendered wax, less 5c per pound rendering charges. Our rendering process saves the last drop of wax for you. "Put your name on all packages."

**THE FRED W. MUTH CO., CINCINNATI, OHIO**

*"The Busy Beemen"*

**Are You Losing a Single Pound of Fall Flow**

**Use Root Shallow Equipment and Save Money by Gathering the Late Crop**

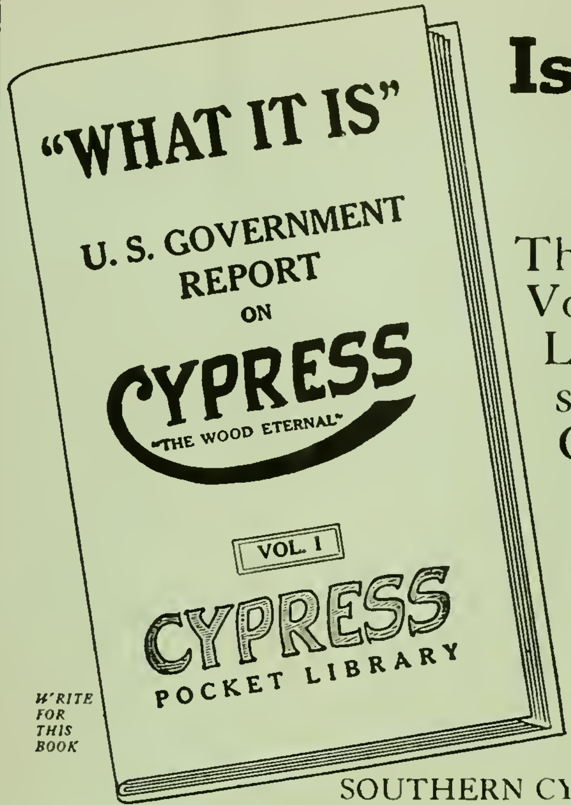
**Are You Marketing Good Honey Well?**

**Use Root Cases and Cans and Make Money by Marketing your Crop in the Best**

Our line of shallow equipment was designed to enable you to gather the maximum crop. Drop us a postal and let us tell you about it. We believe we can interest you.

Our shipping cases display your honey to the best advantage, and yet afford the greatest possible protection against breakage and mishap. You cannot make a mistake in ordering now. We also have a full line of bright new cans and flint glass jars. Let us quote on your needs along this line.

**THE A. I. ROOT CO. OF IOWA** COUNCIL BLUFFS, IOWA



# Is Uncle Sam's Word Good Enough?

Then Mr. Bee-man, just write for Volume I of the Cypress Pocket Library and read what our respected Uncle has to say about Cypress ("The Wood Eternal.") You'll then see why any bee-hive, or bottom or winter case not made of Cypress is not so good as it might be. 42 other volumes all free. The list is in Volume I. Write and it comes.

SOUTHERN CYPRESS MANUFACTURERS' ASSOCIATION
1251 Hibernia Bank Building, New Orleans, La., or 1251 Heard National Bank Building, Jacksonville, Fla.

Insist on TRADE-MARKED Cypress at Your Local Lumber Dealer's. If he hasn't it, *LET US KNOW IMMEDIATELY*

# FOREHAND'S THREE BANDS

## THE THRIFTY KIND

Twenty-eight years of select breeding brings these bees up to a standard surpassed by none, but superior to many.

Place your order now for August and September delivery. We have booked as many orders for pound bees as we can handle this season.

**PRICES AFTER JUNE 1**

| | 1 | 6 | 12 | 100 Each |
|---|---|---|---|---|
| Untested | $1.50 | $ 7.50 | $13.50 | $1.00 |
| Select Untested | 1.75 | 9.00 | 16.50 | 1.25 |
| Tested | 2 50 | 13.00 | 24.50 | 2.00 |
| Select Tested | 4.00 | 22.00 | 41.50 | 3.35 |

No reduction in prices after July 1 as stated in circular.

**W. J. FOREHAND & SONS, The Bee Men**
**Fort Deposit, Alabama**

# BEE SUPPLY PRICES

## A FRANK TALK WITH BEEKEEPERS

No one likes high prices but the profiteer. We are all sick and tired and irritated by higher this, higher that and higher everything. We have all waited for the turning point when things would begin "going down." We as manufacturers of beekeepers' supplies, have hoped for this turning point as anxiously as any beekeeper possibly could. We have been encouraged by seeing some necessities, such as men's and women's clothing, going to lower levels, and have hoped to see lower prices reach to metal and lumber materials. We have expected the tide to turn in our field of metal and wood manufacture, hoping not to have to advance prices. So it is that we have made only a very few minor advances now for two years.

But the turning point of higher prices of materials does not come in our field, and is not in sight at this date, July 1, because the manufacturers of metals and lumber are today swamped with orders at prevailing high prices. These high prices are going to continue while the rush of orders continues—and there is no turning point in sight.

Prices asked today on pine lumber are more than double, and basswood three times as much as prices in effect two years ago. Except for the fact that we had a year's lumber supply purchased in advance we would have been compelled to advance prices a year ago for the past season.

Metal parts of our extractors, smokers, uncapping knives, queen excluders, etc., have increased from two to six times their former cost to us. Our labor cost has increased 60 per cent during the past two years.

We put these plain facts of our own manufacturing situation before our customers to explain the absolute necessity for advancing the prices of a considerable part of our bee supplies. It becomes necessary to do this if we are to continue to manufacture for the beekeepers without actual loss.

We say to our beekeeping friends and customers that we shall reduce what both they and ourselves regard as too high prices just as fast as the price of materials used in our manufacture may permit. We do not like high prices for the beekeeper any better than the beekeeper himself likes them.

## ROOT QUEENS

Our queens are bred by as skillful and experienced queen-breeders as can be found in the United States. There are very few places where queens are reared under as favorable conditions as in our own Ohio queen-rearing yards in midsummer. The strain is proved and of the highest quality. We guarantee that better queens than ours cannot be bought anywhere. Prices are :

| | | | |
|---|---|---|---|
| 1 Untested Queen | $ 2.00 | 24 Untested Queens | $40.80 |
| 6 Untested Queens | 11.40 | 48 Untested Queens | 76.80 |
| 12 Untested Queens | 21.60 | 100 Untested Queens and upwards—special prices quoted. | |

Inquiries as to tested or breeding queens invited. The demand for these often exceeds our supply. So order well in advance.

Write or wire when deliveries are wanted. We are producing in large quantities this season, and with advanced information as to the wants of our customers we shall at times be able to quote unusually attractive prices on large quantities.

**THE A. I. ROOT CO., Medina, O.**

VOL. LX

NO. 9

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# AMERICAN BEE JOURNAL

SEPTEMBER, 1920

# WHEN THE BEES STING

**YOU'LL NEED AN "IDEAL BEE VEIL"—TRUE TO ITS NAME**

*$1.50 Post Paid in U. S. A.*

## WAX---OLD COMB

We pay you the highest market price for rendered wax, less 5c per pound rendering charges. Our rendering process saves the last drop of wax for you. "Put your name on all packages."

## HONEY

Send us a sample of your extracted honey. We also buy comb honey. Tell us how much you have and what you want for it. We pay the day shipment is received.

**THE FRED W. MUTH COMPANY**
**CINCINNATI, OHIO**

*"THE BUSY BEEMEN"*

## THE BEST BEE BOOKS

**THE HONEYBEE**
By Langstroth and Dadant.

A very complete text on beekeeping. 575 pages, attractive cloth binding, $2.50, English, French or Spanish editions.

**FIRST LESSONS IN BEEKEEPING**
By C. P. Dadant.

Will start you right. 167 pages, 178 illustrations, cloth binding. Price $1.00.

**AMERICAN HONEY PLANTS**
By Frank C. Pellett.

First book in the English language on the subject of the honey plants.
300 large pages, 155 illustrations, cloth binding; $2.50.

**OUTAPIARIES**
By M. G. Dadant.

Valuable to every extensive beekeeper. 125 pages, 50 illustrations; cloth bound.. Price $1.00.

**PRACTICAL QUEEN REARING**
By Frank C. Pellett

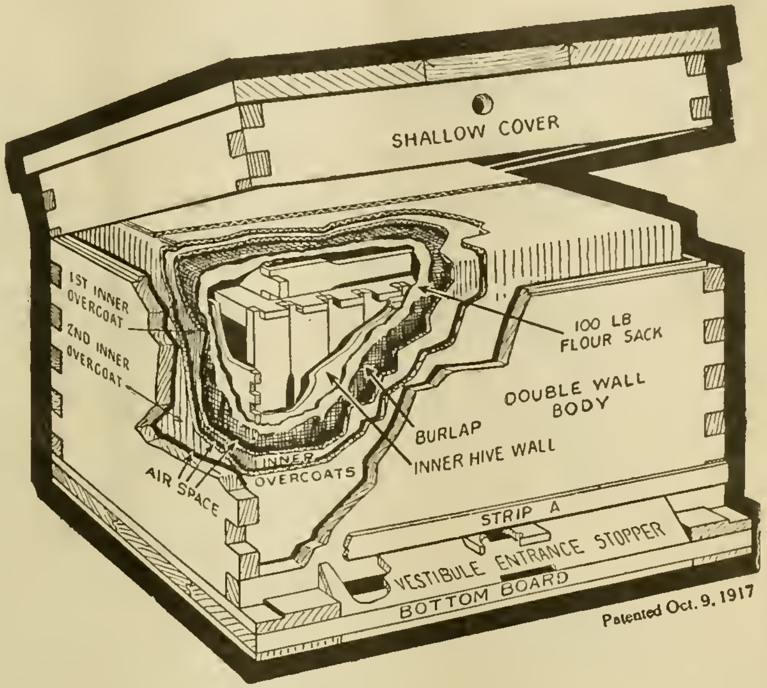
Gives all up-to-date methods of rearing queens for the small beekeeper or for the specialist. Cloth bound, 105 pages, 40 illustrations.
Price $1.00

**1,000 ANSWERS TO BEEKEEPING QUESTIONS**
By Dr. C. C. Miller.

Answers the questions that other books overlook. Cloth bound, 276 pages. Price $1.25.

**AMERICAN BEE JOURNAL,**
**Hamilton, Illinois**

## WINTER PROBLEM SOLVED
—BY THE—
## HIVE WITH AN INNER OVERCOAT



**FURNISHED WITH JUMBO DEPTH OR STANDARD HOFFMAN FRAMES**

Plan to try out a sample shipment of these hives the coming winter and be convinced of their efficiency and durability. Our winter's loss the past winter of 1919-20 was less than 5 per cent, and this was due to starvation and poor queens. The bees were confined to the hives without a flight for about 120 days. These hives will winter normal colonies perfectly under the most severe conditions. We have many testimonials, too numerous to publish. The two Inner Overcoats with intervening dead air spaces and inner covering or blankets close up about the brood-nest is what does the trick. A person could have any amount of blankets fastened up on the walls of a room and still freeze to death if left in the center of the room without close up protection or insulation. If you can eliminate your winter loses, think what it will mean to you.

Order early, as freight is slow and uncertain and will get more serious as winter approaches. Do not fail to try out a sample shipment. Catalog and special circulars sent on request.

**TIN HONEY PACKAGES**

2½ lb., Friction Top cans, cases of 24
2½ lb., Friction Top cans, crates of 100
2½ lb., Friction Top cans, crates of 450
5 lb., Friction Top pails, crates of 12
5 lb., Friction Top pails, crates of 100
5 lb., Friction Top pails, crates of 200
10 lb., Friction Top pails, cases of 6
10 lb., Friction Top pails, crates of 100
60 lb., case, in cases of 1 and 2
60 lb., cans in crates of 24 and 50

Ask for our special money-saving prices, stating quantity wanted.

## A. G. WOODMAN CO.
**GRAND RAPIDS, MICH., U. S. A.**

"GRIGGS SAVES YOU FREIGHT"
TOLEDO

**NOW FOR THE 1920 HONEY CROP** We will buy it, both comb and extracted

We want especially White Orange, White Sage, White Clover, Basswood, Raspberry. Write us what you have, sending samples, and prices asked, in first letter.

SECOND-HAND 60-Lb. CANS

These cans used only once, packed in good cases. 10 cases, 70c; 50 to 100 cases, 65c; 100 to 500, 60c.

BEESWAX WANTED

**GRIGGS BROTHERS CO., TOLEDO, OHIO** DEPT. 24

"GRIGGS SAVES YOU FREIGHT"

**QUEENS** **BEES BY THE POUND** **QUEENS**

The rush of our bee shipping season will practically be over by July 1st; will then be in position to take care of your QUEEN orders. Just received a picture from a party showing a colony built up from about 2 pounds of bees and a queen last spring (1919) and at that time weighed 330 pounds gross; others in the yard did better than that one. We have had colonies here gather 400 pounds spring crop. Party wrote from Chicago: "The shipment of bees was received on May 7, this year; hived same day; did not examine until 18th, when we found all queens accepted and had laid in three frames. We greatly appreciate receiving such good grade of bees and hope to favor you with larger orders in the future." Another from Nebraska: "Wish to tell you how well pleased I am with the business done with you. Some of the 50 packages had less than 100 dead bees in them. Those queens of yours are the best uniform QUEENS I have ever received, What is your price on 200 two-pound packages with queens for spring, 1921?"

Our QUEENS are hardy, gentle Italians; they throw bees that fill the supers. GUARANTEE safe arrival and satisfaction on QUEENS. With my method of feeding, can ship bees successfully in July and August. Get a few packages and build them for the fall flow or winter. Send for FREE Circular giving reference, prices by parcel post, nuclei, guarantee, etc.

| | 1 | 6 | 12 | 50 | 100 |
|---|---|---|---|---|---|
| Untested Queens | $1.50 | $7.50 | $13.50 | $48.00 | $95.00 |
| Select Untested Queens | 1.65 | 8.25 | 14.85 | 52.80 | 104.50 |

| | 1 | 6 | 12 | 50 |
|---|---|---|---|---|
| Tested Queens | 2.50 | 13.50 | 27.00 | 110.00 |
| Select Tested Queens | 3.00 | 16.20 | | |

1 pound package bees, $2.40; 25 or more, $2.16 each
2 pound package bees, $4.25; 25 or more, $3.83 each
3 pound package bees, $6.25; 25 or more, $5.62 each

Add price of queen wanted when ordering bees.

**NUECES COUNTY APIARIES,** E. B. AULT, Prop. **CALALLEN, TEXAS**

"Everything in Bee Supplies"

**"SUPERIOR" FOUNDATION**
**HONEY CANS**

We are at your service. Beeswax wanted at top market price.

SUPERIOR HONEY CO., Ogden, Utah
(Manufacturers of Weed Process Foundation)

**THREE BAND ITALIANS**
**TESTED DISEASE RESISTORS**

PRICES

| June 15 to July 15 | 1 | 6 | 12 |
|---|---|---|---|
| Untested | $1.50 | $8.00 | $15.00 |
| Select untested | 1.75 | 9.00 | 16.00 |

| July 15 to Oct. 1 | 1 | 6 | 12 | 100 |
|---|---|---|---|---|
| Untested | $1.30 | $7.50 | $13.50 | $110.00 |
| Select untested | 1.60 | 8.00 | 14.00 | 115.00 |
| Select tested, any time after June 20 | 3.00 | 16.00 | 29.00 | |
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| 30x3 | 6.40 | 1.50 | 34x4 | 8.65 | 2.60 |
| 30x3½ | 6.40 | 1.65 | 34x4½ | 9.90 | 2.90 |
| 31x3½ | 6.65 | 1.75 | 35x4½ | 10.90 | 3.06 |
| 32x3½ | 6.90 | 1.90 | 36x4½ | 11.40 | 3 30 |
| 31x4 | 7.90 | 2.15 | 35x5 | 12.40 | 3.40 |
| 32x4 | 8.15 | 2.30 | 36x5 | 12.60 | 3 65 |
| 33x4 | 8.40 | 2.40 | 37x5 | 12.65 | 3.65 |

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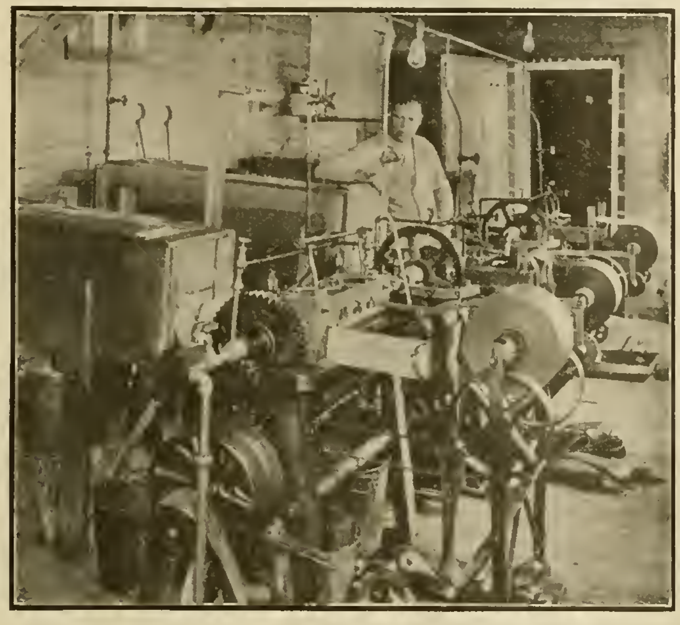
The **Weed Process** was not invented in a single day. E. B. Weed who invented the present system of machinery on which **Dadant's Foundation** is manufactured made many experiments before he was successful.

Part of his experiments were made at the Dadant factory. Some of our older workmen can still recall the hot wax squirting everywhere from the jaws of different presses before the modern sheeting machine was finally evolved.



Sheeting wax on Weed Machines for milling into Dadant's Foundation

His process was promptly accepted by the Dadants as a step forward, not in the making of a foundation superior to the hand made, but of insuring quantities sufficient to supply an ever growing demand.

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Nailing machines have largely replaced hammers, and trucks taken the place of horses and wagons, but the same care, the same exactness of having all foundation first of all satisfactory to the Dadants and to the Dadant bees is still exercised and will continue to be.

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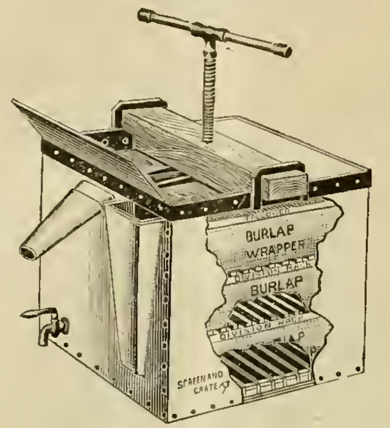

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The Hershiser wax extractor tank may be used to heat or liquify extracted honey, as it holds four 60-pound cans. Many beekeepers use it to drain cappings and to work wax into big cakes.

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AMERICAN BEE JOURNAL

VOL. LX—NO. 9 HAMILTON, ILL., SEPTEMBER, 1920 MONTHLY, $1.50 A YEAR

# Requeening and Preparing for Winter

By C. P. Dadant

IF we have not done it earlier, September is a good month to requeen the colonies that have old queens. At this time, queens may be bought cheaper than at any other date during the entire honey season.

Some beekeepers advise requeening every year. I do not. I believe a queen is better in her second year, as a rule, than in her first season. If she was not good in her first year, she should have been replaced at once. But I would not have the heart to kill a queen, a year old, that was heading a strong colony. I could probably not do better by replacing her, then, and I might do worse.

Removing a queen to introduce another is considered a great task by some beekeepers. A French apiarist describes what he calls "the automatic finding of the queen." This consists in driving the bees into an empty upper story. When they are all there, he puts an excluder between the upper and lower stories and drives the bees back. The queen and the drones, of course, remain in the upper story. This will work and may be used in extreme cases, or with immovable combs, skeps, box hives or gums. But with a little care, the queen may be found, nine times out of ten, without so much disturbance. Smoke the bees sparingly, just enough to keep them from stinging; remove one of the outer combs to have plenty of room, put it away out of the reach of robbers, then lift the combs one after another, examining each comb first on the side away from you. The queen dislikes light and usually hurries to the other side of a comb as soon as exposed to the light. With a little practice, queens may be found in from 5 to 10 minutes. Italian bees are much better than common bees in this respect, since they do not rush from one comb to another as many of the blacks do. But the practical apiarist aims to keep only Italian bees .It is certainly profitable to do so.

To have good colonies for winter, we must have plenty of young bees. This is a requirement recognized by all teachers. September is the month in which to rear them. If we have a sufficient amount of super room and a vigorous queen, with the usual amount of harvest, there will be no trouble in having plenty of young bees. There are, however, two possibilities—too much or too little honey in the brood-chamber.

A crowded condition of the brood-chamber with honey, may not leave enough room for the queen to breed sufficiently. This happens often in the production of comb honey, especially when the month is cool. The bees have a tendency to crowd the cells with supplies. Then it is advisable to remove one or two of the fullest combs and give the colony some combs from weaker and less supplied hives. We may have divisions or colonies which were left queenless late, that need help. We will kill two birds with one stone by making the exchange.

W. S. Pender, editor ot "Australasian Beekeeper," of West Maitland, New South Wales, whose visit to Hamilton was mentioned in the July number of this Journal.

Too little honey in the brood-chamber, in September, is often a characteristic of extracted honey production, with large hives. The colonies are strong, they are supplied with ample supers. They leave to their queen all the room she needs and, not foreseeing their owner's greed, they put all their honey in the supers. When the supers are removed, if we are not careful, we leave the brood-chamber with brood mainly, but with insufficient stores. To prevent this, in anticipation, we should crowd the colony a little for room, giving them a decreased amount of super room.

The novice will understand, from the above statements, that in any case, we must examine our hives previous to the end of the crop and supply them with whatever they appear to need. Even our most practical men are likely to neglect this work, thinking that, at the end of a good season, the bees will be sure to thrive. It is a matter upon which I cannot too much insist, for my bees have occasionally suffered from both extremes, too much wealth or too little.

In mentioning this matter, I am not speaking of the condition of abnormal colonies, which, of course, we would expect to look after, whether they had been queenless or had a bad queen, or had furnished bees or swarms. I am speaking of the usual average of good, honey-harvesting colonies, that would be generally expected to take care of themselves. Modern methods demand that we pay close attention to our bees, if we are to derive constant profit from them The old let-alone ways will not prove profitable.

If we make sure of plenty of stores and plenty of brood in September, we will have the best possible conditions for wintering.

As to the methods of packing the bees for winter, I would prefer to leave that to each man, according to his experience. Cellar wintering is certainly excellent, wherever the winter is severe enough to keep the bees confined to the hive for more than four weeks at a stretch. But wherever the spells of cold weather are interspersed with occasional warm days, during which the bees can have a flight, it is best to winter out-of-doors. Packing the bees must be done early, so as not to disturb them during cold days.

Whatever we do, let us remember that a colony should not be compelled to winter with a lot of empty space at the side or at the top of the cluster. They need pure air, but should not be compelled to keep warm an amount of space which they do not occupy. I have heard of colonies wintering beautifully with 2 or 3 empty supers right above the brood-combs. But I conjecture that they would have saved a great deal of honey and many bees if there had been a chaff cushion right over the brood-frames. It is the same with empty frames at the side. If we remove the dry frames, use a division board, and fill the space outside of it with some dry, non-conducting material, our bees will have just so much better chance to keep warm.

These directions are intended for the average Middle States conditions of fall and winter. But the man in the South cannot lose anything by looking after wintering conditions, even if his winter problem is of less magnitude than ours.

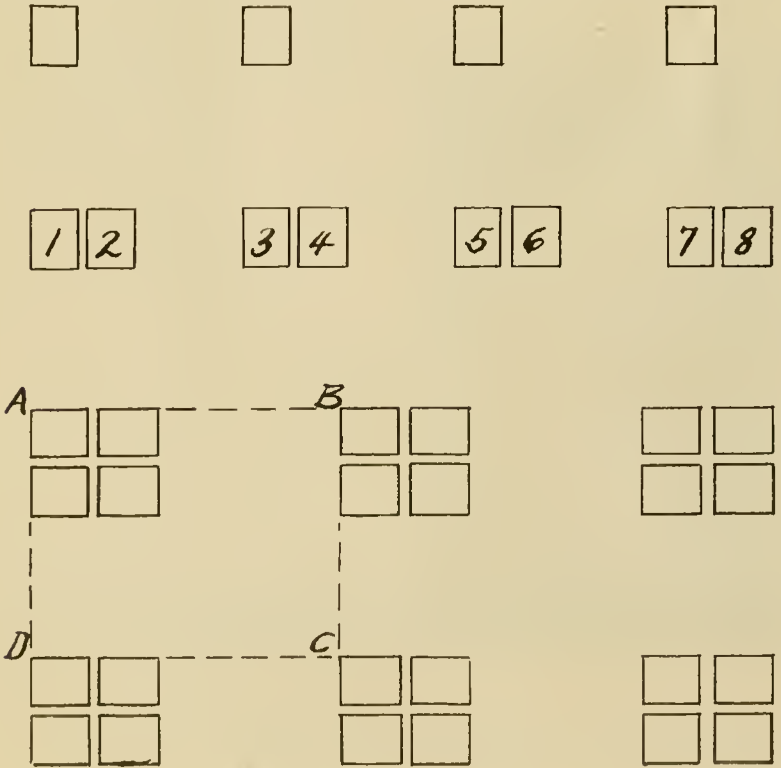
The quality of the honey which our bees have in the brood-chamber for winter, has much influence upon the result. Honeydew, sorghum juice, apple or grape juice are well-known as fatal to the bees, in long confinements. In 1879, we were cursed by those of our neighbors who had vineyards and cider or wine presses. Our bees had about sufficient stores, but September was a bad month and, as they had nothing to gather in honey, they stored a lot of grape and apple juice and greatly annoyed the neighbors. The result was that, instead of making a profit from our neighbors' fruit, as they suspected us of getting, we lost bees heavily during the cold weather. But our evident ill-luck pacified those who had accused us of making an unfair profit. All that fruit juice should have been extracted before winter.

The Monthly Crop Reporter of the United States, for May, 1920, gives out a winter loss of over 14 per cent, average, on bees in the United States, for the past winter, the heaviest loss having been sustained in Connecticut, with an average in that State of 39 per cent. We should improve upon this, and it will be done, if the beekeepers prepare their bees in advance, in accordance with the requirements that past experience indicates.

## ARRANGEMENT OF COLONIES IN THE APIARY

Written by Dr. C. C. Miller on his 89th anniversary

In "Arrangement of Colonies in the Apiary," page 194, do you think you sufficiently emphasize the advantage of putting hives in pairs in order to get a large number on a given space? To be sure, you speak of the Maquoketa apiary, and say, "two hives being generally placed very close together, with a greater space between them and the next." But it is well to tell the beginner plainly, "Set your hives in pairs and you may double the number on the same space." Suppose you have a row of hives uniformly spaced, like upper figure in diagram.



Different plans of apiary arrangement.

If now you set another hive by the side of each of these, you have doubled the number of hives without at all increasing the danger of having bees enter the wrong hive, as second row in diagram.

A bee belonging to No. 5 knows its hive as being at the left side, and if it enters a wrong hive at all it will be more likely to be No. 3 or No. 7 than No. 6, because 3 and 7 are left-hand hives like its own.

The ground occupied by the 160 hives in the Maquoketa apiary was 50x65 feet, or 3,250 square feet. That was 20.31 square feet for each hive.

Now suppose we put them in pairs in straight rows, each two rows back to back, as lower figures illustrate:

The parallel ABCD represents the space occupied by each group of four hives. There will probably be no undue crowding if the line AD be 5 feet long and the line AB 10 feet long. That makes 50 square feet for 4 hives, or 12.5 feet per hive, or 62 per cent more hives on the same ground than allowed at Maquoketa.

Of course irregularity makes for safety, but when Missouri wants to occupy a limited space he may safely be told to put his hives in pairs, in straight rows, two rows back to back.

While it is true, as said on page 193, that "Long rows with exactly uniform spacing, are most objectionable," putting in pairs, and putting rows back to back takes away most of the objection. A very little trouble will still further work for safety. Bees note very small landmarks, and a fence-post or a little tree 5 feet high, here and there, will be a great help in marking locations.

I can speak approvingly of this plan of placing hives after having given it an actual trial for 40 years, only, having room by the acre, I allowed a space of 14 feet between the two double rows of hives. Likely this is no better for the bees, but pleasanter for the beekeeper.

In the American Bee Journal for July, page 226, Dr. G. F. White speaks of an arrangement in which "hives placed in pairs alternate with a single one. I think I never saw this plan mentioned before. It will not allow quite the same number of hives to be crowded upon the same area, as compared with the plan of having all hives in pairs, but is considerably safer against having queens or workers enter wrong hives. When all hives in the row are in pairs, the bees of No. 5, for instance, are not likely to make the mistake of entering their nearest neighbor, No. 6, but are more likely to enter No. 3 or No. 7. Now suppose the hives are 17 inches wide, with 2 inches between the two hives of each pair, and a sitting-room of 24 inches between the pairs. That will make the bees of No. 5 go 60 inches to enter either No. 3 or No. 7. Suppose, again, that pairs alternate with single hives, with the same spacing as before. If the bees of No 5 enter a wrong hive, it will most likely be No. 2 or No. 8, because these are the nearest hives that resemble No. 6 in appearance, and the distance from No. 5 to either of these is 101 inches. So the plan given by Dr. White is 68 per cent safer than to have all in pairs. Worth considering.

There, I've said more than I intended when I started in on that, but perhaps it may be of enough importance to print. Anyway, you mustn't blame me if I talk a good deal today, for I never was 89 years old before.

## AN OLD-TIME METHOD OF SHIPPING BEES

Through the kindness of M. H. Fairbanks, of Homer, N. Y., we are able to reproduce the following account of the manner of shipping bees to California in an early day. The clipping is from an old copy of the American Agriculturist. Although the date had been cut off, it apparently appeared in the days of Harbison:

### Transporting Bees

"Large shipments of bees have been recently made to California, and the demand for the Pacific Coast, as well as down the Atlantic, and other distant points, is increasing. Several inquiries have been addressed to us for information, as to the best mode of preparing them for transportation, when to be carried over the water, and especially when to be subjected to a change of climate in passing through the tropics. We cannot better answer these queries than to give the accompanying illustration, which we sketched from one of a lot of hives passing through this city on its way to California. The hive was of the common box form, having drawers at the top. A narrow strip of board was nailed upon each of the four corners, which projected down about 6 inches below the bottom of the hive, to form temporary legs. Over the open bottom of the hive a sheet of wire-cloth was nailed, its edges being bent up, and tacked to the edge all around. This formed an open-work box, hanging down some 4 inches, or within 2 inches of the bottom of the temporary legs. The drawers were removed and wire-cloth nailed over. This arrangement secures free ventilation and access to air and light, without allowing the bees to escape. When carried on land, the hives were turned upward, but when taken on shipboard, they were set in their natural position. We learn that by this arrangement there has been little loss among the hundreds of swarms that have gone to California during the past four months."

## TWO QUEENS IN ONE HIVE

By George B. Dickerson

I had an experience last summer which perplexed me very much at the time, and I have wondered many times since if other beekeepers have ever noticed a parallel case.

Where I have my home the bee range is pretty well crowded, so I keep only about a dozen stands there and have a couple of outyards, one about five miles and the other about eight.

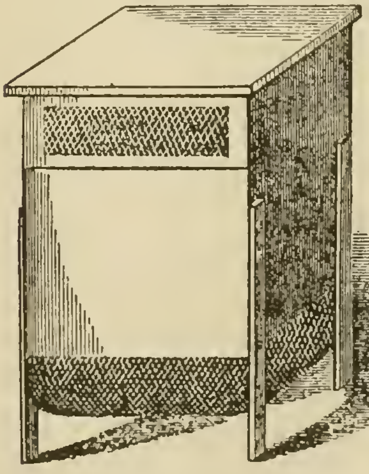
Last May, in the 5-mile apiary, I ran onto a case of European foulbrood. So I promptly killed the queen, which, by the way, was small and black, and proceeded to treat the colony. After a few days, of course, I removed the queen-cells and was careful to get them all, too. After several days I put in two ripe cells from a choice golden Italian I had at another apiary. I put in two because I had just two left, and no place to put them. Along in June I looked in the hive and found brood in all stages and plenty of it, and a fine looking golden queen. When I saw the queen I stopped looking, closed the hive and left it so until late in August, when I decided to get all the goldens out of that yard and replace them with leather-colored. I took the queen from this hive back home and put her in a queen-mating nucleus to keep until I should find use for her elsewhere, and placed in the hive a caged queen to be released by the bees, as per regulation.

On returning six days later the queen in the cage was not released and in fact they had tried to smother her by sticking up the screen. Being surprised, I started looking through the brood-chamber and found brood from eggs up. On the second frame I took up was a fine large golden queen which looked just like the other one I had taken out. At first I thought the queen had left the nucleus and come back to her old home. I had heard of such things, but had never seen it, besides the distance was too great I thought. Well, I went over and looked and she was right where I had left her, so I had an extra queen. I can't see any other way but they both came out of the cells, mated and worked side by side in the same hive for over two months, which is, according to my experience and observation, very much against the nature of the "beast."

My hives are all numbered and when I work a stand I make a notation on the cover of the work and date, which I copy in a small note book which I keep for that purpose, before leaving the yard. As all the records correspond in every detail I can't see any chance for an error on my part.

Someone else come along with your experience along these lines.

El Cajon, Calif.



Box used for shipping bees to the Pacific Coast in the days of Harbison.

## TAKING GRANULATED HONEY FROM BARRELS

By C. P. Dadant

"As Mr. Dadant has used barrels for years, I would like to see an article from him on how to get honey out of the barrels when it is granulated. Did you ever try to heat the barrel to melt the honey?"

New York. G. W. HAINES.

Answer. No, I never tried to heat the barrel. As wood is a non-conductor of heat, it might be a slow job.

If you expect your honey to granulate in the barrels, it is best to have them standing on end at the time of granulation, though it is not indispensable. If you have one end up, whatever there may be of foam, of impurities, particles of wax, etc., will be at the top, and as the barrel is never filled entirely, the head will not touch the honey. It is a little more difficult to remove when it touches the granulated honey.

Mark your barrel head and the stave ends with a pencil or a crayon in two places, so that you may be able to replace the head in exactly the same spot. Have a large gimlet screwed into the center of the head for a handle. Let the head be carefully cleaned, so no dirt will fall in. Remove the hoops after having marked them also with a crayon so they may be replaced in exactly the same position. When the last hoop is taken off it may be necessary to keep it at the top, to hold the staves together. The lower hoops, of course, are not touched. If the staves do not separate from the honey, they may be spread with a wooden mallet.

When the head is lifted out, fasten down one of the hoops to hold the barrel together.

To remove the honey, we use a clean, new spade. We have found nothing better. A spade will readily cut out the hardest granulated honey.

When the honey has all been removed, put the head back by holding it, with the help of the gimlet, in its proper place, taking care to fit it exactly where it was before, as the crayon marks or pencil marks will indicate. Then drive the hoops also in exactly the same places. If the job is done properly, the barrel will be as good as ever to use for honey. We have used some barrels many times over. But when you do not take precautions to put the head back in exactly the same position, the possible irregularities in it may cause it to leak, next time.

Never soak a honey barrel with water. Never put hot honey in a barrel. If you want to put the honey back in the same barrel, you should allow it to cool after melting it. We have often taken honey out, melted it and put it back in for shipment, without the least trouble.

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The oldest Bee Journal in the English language.
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MAURICE G. DADANT ........ Business Manager

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# THE EDITOR'S VIEWPOINT

### Good Samaritan Fund

The fund for the Franco-Belgian beekeepers has been somewhat neglected during the busy season. But as the crop is being harvested, many of our beekeepers remember that there is still a great deal of suffering across the ocean. So we are beginning again to receive help. The following has been received:

| | |
|---|---|
| Third list, begun in May | $46.50 |
| L. W. Derrin, Cushman, Ore. | 2.50 |
| Montgomery Co., Pa. beekeepers | 5.00 |
| Orange Co., Calif., beekeepers | 25.00 |
| Chas. A. Brown, Piru, Calif. | 50.00 |
| Geo. S. Demuth, Washington, D. C. | 10.00 |
| To date | $139.00 |

Only a few of the queens subscribed were sent over, owing to the irregularity of transportation and dangers of loss. So the queens subscribed are being sold and in some future number we will give a list of the amounts. Meanwhile, we hope County and State Associations will follow the example of the Orange County, Calif., and Montgomery County, Pa., beekeepers. Each $100 is worth 1,300 francs in French values and a trifle less in Belgian values, and our friends over there are putting the funds to good use. Statements will be made when the work is done, to show where the help went.

### How Many Visits to the Pound

We read tha. a beekeeper has figured out that the bee must insert its proboscis into 2,500,000 tubes of clover blossoms in order to secure a pound of honey. It would be interesting to know just how he arrived at the number. It would be rather laborious to count them. Anyway, it is quite probable that the number would vary somewhat under different conditions.

### Another Newspaper Selling Honey

After the big sale of honey by a New York newspaper last winter, we are not surprised to learn that the Kansas City Post has shipped a quantity of comb honey in from the west and has been selling it direct to its readers. The only danger of such campaigns lies in the fact that those who buy the honey shipped in large amounts and sold at cost by the newspaper, may regard the grocer who must add a reasonable profit for handling, and who, in many cases, buys at a higher price from the wholesaler, as a profiteer. The newspapers buy direct from producers, in large quantities, and give their readers the full benefit of the saving. Many new customers are made for the beekeepers' product by such campaigns.

### Bees in a Shoe Box

In an old copy of "Progressive Beekeeper" is an account of a queen with attendants shipped by mail in a defective cage. Two of the worker bees escaped while on the journey, but were caught by a mail clerk and placed in a shoe box in which some holes were punched to give them air. The queen, with the remaining workers, went through safely in the cage and the workers which escaped, in the shoe box.

If present-day express messengers and mail clerks would display similar interest in getting package bees and queens safely to their destination there would be far less complaint against the shippers.

### Demonstration Meeting

A. L. Kildow, State Inspector, announces a demonstration meeting for beekeepers at his home at Putnam, Ill., on September 10. Dr. Baxter, Professor Flint, H. H. Park, Assistant Secretary of Agriculture, and the editor of this Journal are announced to appear on the program.

### New Law for Georgia

The apiary inspection bill drafted by the members of the Georgia Beekeepers' Association and presented by J. E. Bowden, of Waycross, has been passed by both the Senate and House of the Georgia Legislature and has gone to the Governor for his signature, required to make the measure a law. The association is to be congratulated on its success, since the organization was perfected, the opinion crystallized, the law drafted and passed all within one month. This young and lusty organization, which has made its voice heard imperatively in Georgia legislative halls is headed by J. J. Wilder, who was chosen to be its first President, at the annual meeting. Commissioner J. J. Brown, of the Department of Agriculture, Atlanta, whose office will have charge of apiary inspection enforcement, is actively behind the bill, and no doubt has been expressed that the Governor will sign the bill.

### Paper Still Going Up

At a time when we had hoped for falling prices, the tendency of paper is in the other direction. For months past we have met with one raise after another, each time fondly hoping that it would be the last and that prices would soon begin going down. In a recent issue we mentioned our problem under the title "Troubles of a Publisher." Since that time new rises in the paper market have taken place and a trade journal announces still another 4 cents per pound in the kind of paper we use. If this latest rise goes into effect it will add 12 cents per year to the cost of paper for the Journal for every subscriber. A greatly increased freight rate will be in effect by the time this number reaches our readers and the increased rate will make every item entering into the Journal cost us more. Higher wages for printers and binders, increased cost of paper, ink and engravings have increased the cost of getting out the Journal to such a point that we can see no other way to continue getting out the same quality of Journal except to increase the subscription price. We have tried every means at our command to avoid such a raise, in the hope that the high prices would come down. We are informed by those familiar with the paper trade that cheap paper cannot be expected again, because the forests that supply the wood pulp are constantly getting smaller and that things made from wood must continue high in price.

We do not wish to reduce the size of the Journal nor the quality of our reading matter. In order to give all our present subscribers due notice of the advance, it will not go into effect until October 15. Until that date subscriptions will be accepted at $1 per year. After October 15 the price will be $1.50 per year.

### In Michigan

As promised, on page 228 of the July number, I managed to go to the two Michigan meetings of July last. It was delightful, Michigan has many fine roads, on the north end of the southern peninsula. The weather is much more pleasant than summer weather in the Mississippi Valley, and beekeepers are numerous. The milkweed is a splendid honey plant, and although its "milk" is rather an objection, its honey is fine. Wife and I spent four weeks at Bay View and vicinity, on Little Travers Bay, where a "Summer Assembly' carries on a continuous summer course and Chautauqua. I don't know of a more enjoyable spot for elderly people and even for young people who can be satisfied with base ball, basket ball, tennis, croquet, golf, a little fishing, and going back and forth among summer resorts where there are no mountains to climb and no exertions.

Oakland County, Michigan, is mentioned as a lively county. They have a meeting of beekeepers nearly every month, and with good attendance. D. A. Davis is their President. They say much of the enthusiasm in that county, for bees, is due to the influence and earnestness of Miss Abbie Sly, a lady of wonderful activity.

Michigan has many young men of promise. The State that produced Dr. A. J. Cook is now encouraging young men like P. T. Ulman and R. H. Kelty. Ulman was in the A. E. F. and is working hard now at spreading information on bees. Kelty is Secretary of the State Association. He is only 23, but is already making interesting microscopical studies of bees and diseases of bees. At the Huron County meeting he took samples of diseased brood from a comb and in a very few minutes had a microscopic display of Bacillus larvæ, showing very plainly American foulbrood. We need many such men and they should be encouraged, at any cost. There is so much room still for discoveries.

The meeting of Huron County, at the home of David Running, was attended by about 75. A demonstration of practical and profitable beekeeping with 8-frame Langstroth hives, was given in the apiary. By an ingenious management of bees, after a variation of the Demaree plan, Mr. Running succeeds in getting a fine crop of honey from "3-pound packages" of bees received May 12. He had as many as 6 8-frame stories occupied with bees, brood and honey. He is certainly very successful, the only drawback being the large amount of work required to keep 300 colonies under this management, as every colony must be examined at least as often as once in 10 days, to keep down the swarming fever.

Mr. Running has proven to his satisfaction that when the brood is put up at least 3 stories removed from the queen and the queen is confined to the lowest story by an excluder, the young queen hatches above and, if she has been given a separate entrance, will often be mated and will begin laying without interference from the workers, who seem to consider this remote apartment as a separate brood-chamber. Then there is no danger of swarming.

David Running's large experience with 2 and 3-pound packages, for several years past, indicates that queens sent with the bees should be caged in such a manner that the bees cannot release them during the trip. On arrival, after the bees are hived, the candy end of the cage should be uncovered and a toothpick or a match forced through the candy to help the bees in releasing her. There is no loss of queen when this method is followed. The attention of both shippers and buyers is called to this advice, which is based on protracted experience, by an attentive man.

Michigan has some wonderfully lonely spots. Between Alba and Frederick, in the middle north of the peninsula, is a station called "Mancelona Road." It is in the center of an immense burnt over plain, where grow ferns and endless thickets of red raspberries. There is neither station, depot nor village—absolutely nothing but a wagon road crossing the track, and winding around in the sand. I am told there are dozens of such "stations" in northern Michigan. Splendid places to keep bees and harvet raspberry honey. But when one considers the loneliness of such spots, one wonders whether it is worth while to keep bees so far away from the comforts of life. Not a neighbor for miles and miles.

### Propolis for Stopping Leaks in Tin

Years ago, when we first used tins for honey, I found it a great annoyance to empty a leaky can of its honey and to repair it. I tried beeswax, but it would not stick. Mixing a little tallow or grease with the wax made a good mixture and I have used this at all times to stop a leak, if small enough, in a filled honey can. Now I find, in the "Bulletin de la Societe d'Apiculture de la Meuse" for November last, the recommendation of using propolis for this purpose. As every beekeeper always has propolis handy, it is a good suggestion.

At the meeting of Michigan's State Beekeepers' Association, in Boyne City, Hon. Colin P. Campbell, of Grand Rapids, called the attention of the beekeepers to the great amount of honey which is still wasted in Michigan for want of bees to harvest it, which has been estimated at fourteen million pounds each year. Many farmers make fruitless efforts to destroy the milkweed in their pastures, while this same milkweed would give them a profitable income in fine honey.

W. D. Achord, of Alabama, was present at the Michigan meeting and explained some of the troubles that meet the shipper of bees by the pound in the South, every spring. Every northern buyer wants his bees at about the same date, and this is next to impossible to achieve. One of the great troubles of shippers is the fact that it is quite warm in the South and cool in the North when the bees are shipped. They need shade, on the way, but many express agents or mail agents, regardless of instructions, leave the cages containing them for hours in the sun, at connecting stations, thus causing the death of bees which the shipper has to stand. This delays delivery of orders, since more bees must be furnished than expected.

### The Michigan Meeting

The meeting at Boyne City was well attended, over 100 being present. Many came there from all parts of the State in their autos. The roads of Michigan should put to shame the roads of Illinois. It is true that Michigan has better soil for roads. But they spend millions for a bituminous covering which appears to be mainly "Tarvia" and this covering would be about as serviceable on dirt roads, if properly graded, as on gravel roads.

One of the leading features of the Michigan meeting was the approval given to the American Honey Producers' League. It was voted to join it, and as the State Association did not have sufficient funds in its treasury to pay the $100 required, a collection was taken up and the $100 subscribed in a very short time. That is the right spirit, and Michigan is demonstrating that the State which produced such beekeepers as A. J. Cook, W. Z. Hutchinson, T. F. Bingham, James Heddon, R. L. Taylor and many others, cannot show the white feather in a matter of national interest. It may take some time to line up the majority of our State Associations in favor of the American Honey Producers' League, but sooner or later it will be done. Efficient service can hardly be expected unless this comes about.

The program was very full, in spite of the failure in attendance of some desirable men, such as Mr. Rattray, of the Domestic Beekeeper; Mr. Elmer Hutchinson and Mr. Townsend. The latter was present the first day, but did not remain long enough to give the expected address.

The citizens of Boyne City helped to diversify the program by furnishing automobiles to take a 50-mile trip in the late afternoon to visit the marvelous experimental stock farm which is said to have cost three million dollars to establish. The second day another trip was made to two apiaries and the central plant of E. E. Coveyou, where actual proofs were given of a fine honey yield from clover and milkweed.

The meeting next summer will be at Alpena, on Lake Huron.

Mr. Frank Moore, of Newaygo, Mich., uses propolis, heated, to fill cracks or knot holes in defective lumber in beehives. He presses it in thoroughly and then paints it over, and says that hives finished in that way are as good as those made of clear lumber. They must be.

If you ship honey in 60-lb. cans use strong cans and strong cases, says E. R. Root, as this may save loss of honey, and is sure to secure better condition on delivery. The saving is greater than the extra cost.

### Disgusted With Honey

At Bay View, we met a lady who had been very fond of honey. But accidentally, she saw, in an exhibition, a comb with bees on it, in an observing hive. She said: "I was very fond of honey, but when I saw all those flies on that honey, tramping around, it disgusted me. I can't eat honey any longer. I did not know that honey was made that way.'

E. R. Root advises the shipping of pound bees on strongly wired frames of foundation, and reports that he has known bees thus shipped to work the foundation into comb while in transit.

# Attractions of the Central Extracting Plant

## How one Ontario Beekeeper Handles the Output of Seven Yards with one Honey House and Outfit

By Frank C. Pellett

The central plant. Mr. and Miss Pettit in foreground.

WHEN the writer started for Ontario in June, he had visions of seeing a number of Canada's most extensive honey producers in action. The trip was to include a week at the short course at Guelph and a week among the beekeepers. The visit was at an unfortunate time as far as the weather was concerned. The rain, itself, was fortunate, for the spring had been rather dry and the prospect was not the best. Coming as it did the heavy rainfall insured a crop, and so, of course, was very welcome. However, there is little chance to see beekeeping operations during a heavy downpour, and with one exception the visits to extensive honey producers were either impossible or it rained so hard that there was no chance to visit the apiaries.

The one exception was the visit to the Pettit apiaries at Georgetown. The day was fine and the bees were working hard, so conditions could hardly have been better in this case. Mr. Pettit is too well known to require introduction. His work as founder of the beekeeping department of the Ontario College of Agriculture has already introduced him to every student of beekeeping. It is now more than two years since he decided to give up public work and devote his entire attention to the Pettit apiaries, which are operated in partnership with his sister. The apiaries were established several years ago by Miss Pettit, while Mr. Pettit was at the college.

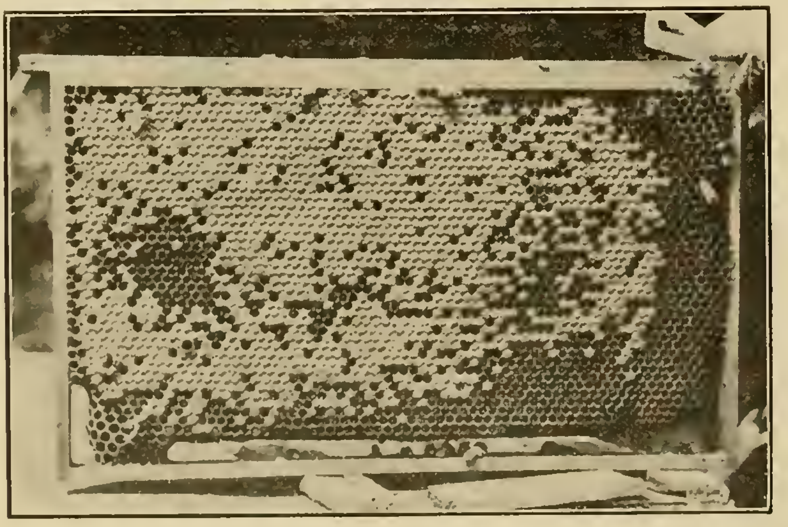
One thing which impressed the writer was the great care they use in selecting their combs. Any comb which sags, has a considerable portion of drone comb, or is irregular in its shape is marked "No. 2" and discarded at the first opportunity. No. 2 combs are used in the extracting supers until such times as they can be spared. The photo herewith shows that with properly wired combs there is little sag, and it is possible to get brood clear to the topbar. Most beekeepers appreciate the value of perfect combs, but too often few take the trouble necessary to replace all the defective ones.

The Pettits seem to be willing to "try anything once," to repeat a common expression. One is impressed with the number of experiments which they must have tried in working out their present system of management. One apiary is in single packing cases, another in quadruple winter cases and at a third the bees are wintered in cases holding eight colonies, etc. The winter problem seems to be of little concern to them. In spite of the extremely hard winter of 1919-20 they wintered with very little loss except in one apiary. Mr. Pettit can only explain the loss in this instance by the lack of proper air drainage.

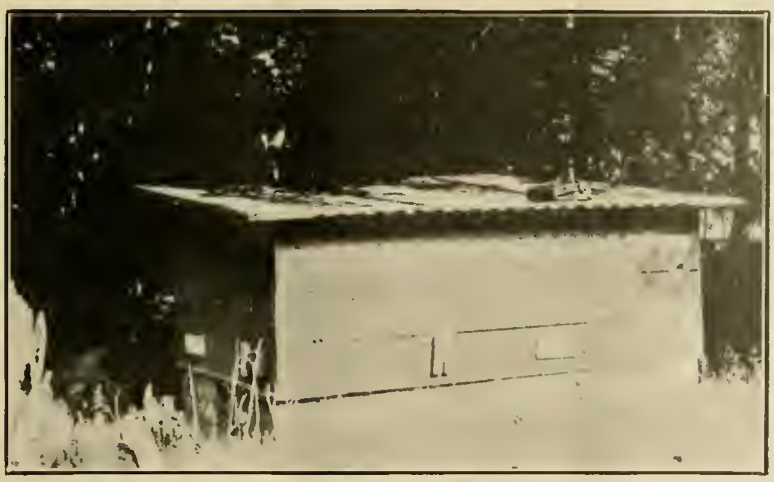
They make a practice of wintering on sugar syrup, owing to the uncertainty of the quality of natural stores. In Ontario the winters are long, and there may be weeks of time when the bees are unable to fly. Since all their bees are wintered outside, it is important that the bees be provided with the very best stores. Given an abundance of sugar syrup, large clusters of young bees and plenty of packing, they find their bees to winter almost perfectly. In fact, for several years past they have packed the bees in the fall and spent the winter in Florida.

The Pettits are enthusiastic about the advantages of a central plant. As will be seen by the illustration, the building is large enough to house all equipment necessary for the seven yards. The loaded truck is driven directly into the building, which is bee tight, thus avoiding any annoyance from robbers while being unloaded.

They contend that one fully equipped building is more economical, as well as more satisfactory, than a makeshift building at each yard. Few beekeepers own the sites of their outyards, and that being the case it would hardly be wise, even though the cost was not prohibitive, to erect a well-equipped, permanent building at each yard. Where the beekeeper has no buildings it is a simple matter



Brood to topbar in carefully wired comb.



One yard is wintered in cases holding eight colonies each.

to move an apiary. It often happens that outyards are left to remain in poor locations when better ones are within reach, because of the fact that there has been a considerable outlay for honey houses, which are not easy to move.

Mr. Pettit says: "After several years of moving machinery, first the hand extractor and capping can in a one-horse wagon, then the power extractor, engine and capping melter with a team, and later in a motor truck, I have become a convert to the central apiary building idea." He argues that the central plant has the following advantages: Less expense for equipment, less wear on machinery, better machinery is used, more honey is extracted each day, extracting and packing is done at home, honey can remain longer in settling tanks, thus making a finer appearance when packed, and finally, at the end of the season, all equipment is at home, where it can be looked after properly.

Advocates of an outfit for each yard or a portable outfit to be carried from place to place will be able to advance a number of arguments to offset these advantages. However, the writer has not yet found an extensive beekeeper who, after giving the central plant a thorough trial, is not satisfied that it is the better plan.

The Pettit building is 24x40 feet, two stories high. The lower story has a concrete foundation, which serves the double purpose of providing a suitable support for the building and equipment and at the same time making it proof against rats and mice. The lower story is divided into three rooms, one for the truck, one for extracting and the third for honey storage. The building is provided with an ample water supply and is connected with the sewer. It is thus possible to clean all floors and equipment thoroughly after extracting and let the wash water run directly into the sewer through a bell trap in the center of the floor. Upstairs there is a cozy office and study, a store room and work room for nailing up supplies, etc., and a lavatory with bath where the men can clean up after the day's work.

The honey is extracted with a power extractor and carried directly to the tanks by a honey pump. Although the Pettits use a steam knife, they do not use the Bingham curved handle knife in general use. Instead they use a straight knife with blade about 10 inches long. Mr. Pettit argues that the straight knife with long blade has some decided advantages over the other.

The beekeeper has been a little slow to adopt modern improvements to his business, but electricity, gasoline and steam are all helping to save labor in the production of honey on a large scale.

## WILD BEES

### Locations Selected by Swarms Left to Themselves

By V. Dumas

The scarcity of bees in France during the past few years has caused me to look for bees, in the wild state, or ill-located, as we see it. In France, it is common to believe that anything which is out of the ordinary belongs only to the New World, that the business of a bee-hunter is applicable only to the virgin forests of America. Yet within a radius of only 12 kilometers (8 miles), around my home, I have been able to secure, in 2 years, over a hundred colonies, for myself or for others. About another hundred, which I discovered, were not taken out, on account of the refusal of the owner. It is evident to me that, if my example could be followed, throughout France, we could partly restore our beekeeping, damaged because of the war.

This bee hunting gave me the opportunity of making divers notes concering the debated points, on the influence upon the yield of the following conditions:

1. Capacity of the hive.
2. The position of the entrance, as regards the cardinal points.
3. Its position at the top or bottom.
4. Exposure to air and weather.
5. Position of the combs across or lengthwise of the entrance.
6. Size and temper of the bees.
7. Size of their combs.
8. Average of honey yield.

I do not claim to settle, through my observations, every one of these points. But experiments upon colonies located according to their choice, without either influence, must have some value.

The locations occupied by runaway swarms, in my locality, are not very varied. I found them as follows:

| | |
|---|---|
| Between the floor and ceiling of a house | 40 |
| Between shutters and window | 16 |
| Within the flue of a chimney | 12 |
| In walls, hollow stone walls | 8 |
| In hollow trees | 8 |
| Between roof and ceiling (attic) | 8 |
| In the mantel-piece of chimney | 6 |

1. I found powerful colonies in each of these positions. But the space available, in each case, appeared to have great influence upon the development of each colony. The most powerful one was located in a great window frame (In France, the window embrasures are very deep, because of the thickness of stone walls, from 18 to 24 inches.—Editor), the weakest in a very small hole in a wall.

2. The orientation of the flight holes was as follows:

| | |
|---|---|
| To the south | 40 |
| To the east | 20 |
| To the north | 12 |
| To the west | 12 |
| In vertical position | 16 |

In every exposure I found power-

Hives arranged in groups of eight when big packing cases are used.

ful colonies. The strongest one was facing south. But it is impossible to establish any conclusion from this, the colonies being in more or less favored locations.

3. Position of the combs in regard to the entrance.

| | |
|---|---|
| Combs below entrance | 80 |
| Combs with entrance in middle | 10 |
| Combs with entrance below | 10 |

In most cases the position of the combs was a matter of chance, outside of the bees' choice. No deduction can be drawn from this.

4. Exposure to air and weather. It is difficult to establish a comparison in this. The most powerful colonies were the most exposed, having ample space and openings, but it seemed as if their harvest suffered from too great exposure, requiring more consumption to keep up the warmth of the brood-nest. Colonies that were exposed to drafts and rain, in the flues of chimneys, were in very good shape. Probably in a more rigorous climate they would have suffered more. The top of their combs was woven together, black and dry, perhaps from occasional sun rays striking them. This created a felt-like condition of the top of the combs which made an appreciable shelter.

5. Direction of the combs as regards the entrance:

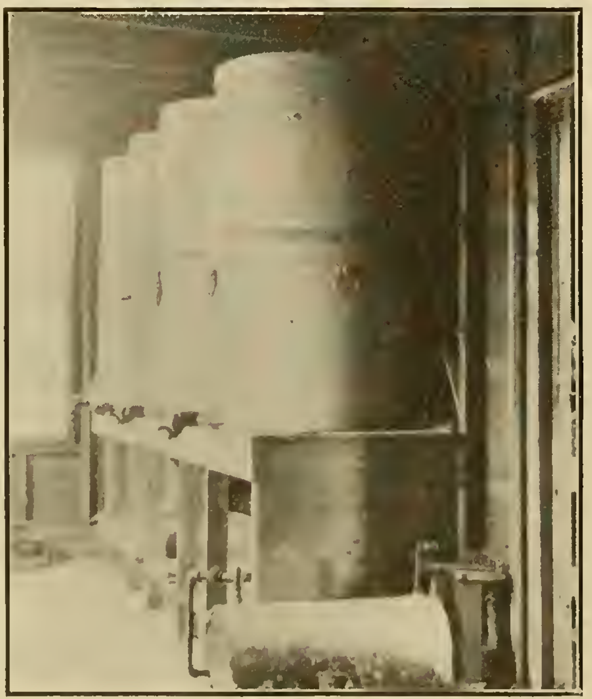
| | |
|---|---|
| Away from the entrance | 90 |
| Crosswise of it | 10 |

As the bees have evidently the choice as to the direction of their combs, it is clear that they prefer that the passages between the combs face the entrance. However, I found one colony in a wide-open wall with the rear combs crosswise of the opening, while the front combs were built the cold way. (In Europe, combs built crosswise of the entrance are called "warm combs" while those built at right angles to it are "cold combs."—Editor). This appeared to me rather incongruous. But my liking of the honeybee does not cause me to accept it as the marvelous insect, with infallible foresight, celebrated by Maeterlinck. Perhaps one cannot be both a poet and a professional beekeeper, even if one can be either. This colony was weak.

The strongest colony I found was, as I said, in a large window embrasure, open at the lower end, with a hole about the size of a man's head, but hermetically closed otherwise. The swarm of bees must have weighed 18 to 22 pounds. An excess of air appears to be an element of stimulation for breeding, in quantity, but of course not in precocity.

6. The size of the bees appears to me to have little if any influence upon their yielding qualities. The advantage, if any, appears to be in favor of the smaller size. On the two sides of a flue, between the flue and the chimney mantel, I found two colonies that had to travel through a wall about 2 feet in thickness for their ingress and egress, along a wooden beam. But on the fireside face they could freely communicate with each other. One of those colonies was composed of common black bees, while the other was a race of smaller bees, such as the African Punics, which are rare in this part of the world. The latter were the more active and had a greater quantity of honey. They are also more aggressive. The percentage was as follows:

| | |
|---|---|
| Common black bees | 92 |
| Hybrids or Italian bees | 6 |
| Small blacks or Punics | 2 |



Storage tanks at Pettit plant.

7. Size of combs.

| Height of Combs | Horizontal Length | No. of Colonies |
|---|---|---|
| 4 inches | 16 inches | 20 |
| 4 inches | 24 inches | 6 |
| 6 inches | 8 inches | 6 |
| 6 inches | 16 inches | 10 |
| 7 inches | 16 inches | 8 |
| 11 inches | 17 inches | 10 |
| 20 inches | 12 inches | 16 |
| 32 inches | 12 inches | 12 |
| 32 inches | 28 inches | 1 |
| 48 inches | 12 inches | 10 |
| 80 inches | 6 inches | 1 |

In this case, also, we cannot decide the choice of the bees as to the preferred sizes, since the walls of the cavity limit them. I found as large crops in hives whose combs were only 4 inches high by 16 to 24 inches in width as in hives the combs of which were 4 feet in length. However, the very largest amount of honey was found in a colony whose combs were approximately 11x17 inches. This is the size of the combs which I use in my apiaries, the Dadant-Blatt hives. It rather pleased me to find it thus in a natural state.

Although foulbrood is in existence in my country, I did not discover a single case of it in the colonies which I thus handled. It induces me to believe that foulbrood is not so readily transmitted by robbing as we are apt to think.

As to the quantity of honey secured from these different colonies, it would be useless to report it, as they were found and handled at various dates, from April to October; the amount of stores necessarily differing at different dates, and in different locations. But I have verified the legendary nature of the prodigious stories reported at times by our country folks. I remember reading the report of a wonderful colony of bees located under the arch of a viaduct, the weight of whose honey was endangering the safety of the stone structure. The popular belief, in immense stores of honey, is due to the idea of some people that a colony of bees, left to its own devices, continues to increase its stores from year to year. So if a countryman estimates that a swarm of bees has inhabited a cavity for 10, 50 or 100 years without anything having ever been taken from it, he will multiply its probable annual harvest by 10, 50 or 100, as the case may be, and expect to find it all stored away. Hence the stories of barrels of honey taken out of old buildings by stone masons repairing the walls.

Facts always contradict these phenomenal yields. From some old chateaux walls, out of church attics, I have removed bees that were reported as having been there from immemorial times and the largest amount I secured in any one case was 121 pounds. So our colonies in domesticity, hived in well-managed apiaries, sheltered from the weather and the rats, are evidently more productive.

Florida Rucher, Mervilla, France.

## INSECTICIDES

By A. F. Bonney

I have devoted a great deal of attention to the question of insecticides, and in connection with the letter from Mr. Francis, head chemist for Park, Davis & Co., of Detroit, Mich., propose to give the result of many experiments.

One of the very best insecticides I ever found was permanganate of potash in connection with formaldehyde. This was all right until the increase in price, due to the war, made the use of it prohibitive. Next came the formaldehyde candles, but they are now, also, too expensive.

I knew the use of cyanide of potassium and sulphuric acid, but as one whiff of the fumes of this combination would be instant death to man or beast, it is not available. If a drop of the strong prussic acid were put on a man's tongue he would be dead before he struck the ground. I have exposed combs to the moths, then sprayed the combs with gasoline. This is effective, but laborious, while dipping the combs costs far too much, so much of the fluid is lost by evaporation and what is held on the combs. Also, there is danger of explosion, if the fumes reach an open flame.

Burning powdered sulphur or the lump brimstone is by far the quickest, safest and, next to the sulphur dioxide made with sodium bisulphide, is, in my experience, decidedly more efficacious, owing I think, to the large amount of moisture thrown off; but the bisulphide costs a matter of 25 cents a pound, wholesale, and sulphuric acid is, just now, expensive, while sulphur and brimstone cost but about 6 cents.

To gain as much moisture as possible in burning brimstone, or sulphur, for they are both the same, chemically, I improvised as follows: Take a big dish pan, set it on three bricks, and into it put some water. Into this set a much smaller dish, metal, of course, and no soldered seams. Fill this inner dish nearly full of sulphur and set fire to it. This for a large room, while for a barrel a much smaller outfit will do. This method makes the use of burning sulphur safe, and we get the moisture from the water surrounding the inner dish, which is heated by the burning of the sulphur.

There is no use trying to fumigate a lot of hives open only at the tops of the piles, so hives which are to be idle in warm weather are arranged as follows. Lay down a small piece of half-inch board, and set a hive on it with the board under one end of the hive. Continue piling hives with pieces of board under opposite ends, and when you have finished, your pile will be level on top and there will be free circulation of the deadly gas to every part of the hives in the pile.

Several piles of hives in a tight room can in this way be all fumigated at once. It is a good, efficacious method, and cheap, for a couple of pounds of sulphur is sufficient to saturate a room 10x20x10 feet in size with sulphur dioxide. The fumigation may be begun at night, and by morning it will be finished.

The Francis letter follows:

"Turning to the chemical question which you have raised, allow me to say that I can thoroughly understand that everybody is looking for some kind of an insecticide which will clean out moths and eggs in combs. If I knew of something which would be "fool proof," non-poisonous and would always be sure to get every single egg, I would certainly give my brother beekeepers the advantage.

I am convinced that there "ain't no such thing"—but some things are very much better than others.

Sulphur dioxide is probably about as nearly effective in destroying both worms and eggs as anything that could be used, but it is just a question as to how the beekeeper can use it to proper advantage and use enough of it.

When ordinary brimstone or sulphur is burned in a barrel or some other tight receptacle and the open hive is set over it, you will do a fairly effective job in destroying the eggs or insects, provided you get enough sulphur and, most important of all, provided there is an opening or a hole that allows the sulphur fumes to reach the egg fully. If the egg happens to be sealed up behind a wall of wax or propolis, nothing of this kind will prove effective, for the simple reason that it cannot reach the egg.

Aside from producing sulphur dioxide by the above method of burning sulphur or brimstone, there is a second or chemical method as follows:

Procure a small quantity of sodium bisulphite from some dealer in chemical supplies and also some ordinary commercial sulphuric acid. Place a handful of bisulphite in an earthenware bowl, put it in the bottom of a box or barrel, add enough water to about half cover the crystals, and then pour on sulphuric acid. A chemical reaction takes place which sets sulphurous acid free in the form of a vapor or gas. One could arrange a tight box of this kind with an opening at the top that a hive would just set over after the bottom is removed; or, on the other hand, one could put a couple of ounces of sodium bisulphite crystals in an ordinary saucer, and a tablespoonful of water, slip it through the opening in the front of the hive just as it stands with the bottom-board on, and then pour in about two ounces of commercial sulphuric acid. The saucer containing the ingredients could then be pushed well under the frames and a tight board could be placed over the opening to prevent the gas from escaping.

As you undoubtedly know by experience, gasoline is absolutely deadly to any insect or insect egg, provided only that it can be **brought in contact with the egg.** Gasoline fumes will not kill the eggs.

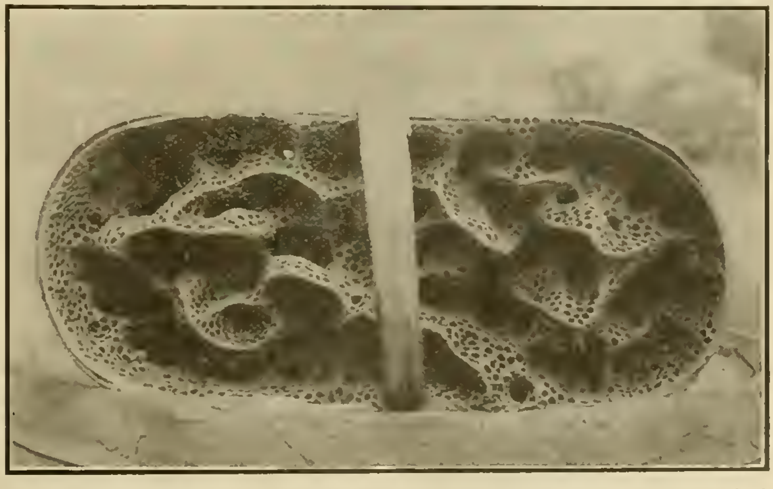
Another method would be to take the bee hives as they ordinarily stand, tightly seal, remove the strip so as to expose the full length opening in front of the hive, slip a saucer under it and in this put a couple of ounces of potassium cyanide. This is a deadly poison and it must be handled with care in the matter of getting any to the mouth. Allow the edge of the saucer to project slightly from the mouth of the hive and quickly pour in a mixture of about two ounces equal parts of water and sulphuric acid. The acid sets free from the potassium cyanide the deadly gas ordinarily known as hydrocyanic acid. The opening in the hive must be quickly stopped up.

As you know, hydrocyanic acid gas is used in enormous quantities to destroy weevils in mills and elevators. The gas quickly gets into all the the cracks and does a clean job of it. I cannot speak authoritatively as to how effective it may be in destroying all the eggs." J. M. FRANCIS.

## WIRING COMBS

By Frank M. Gift

The foundation in my frames does not "sag." My method is to nail a large number of frames in advance and hang them up to season, shrink and dry for at least 5 or 6 weeks; then I wire them, 4 horizontal and 2 cross wires, using the top and bottom holes for the latter. To even the



Basket of combs presented to the Ontario beekeeping department by J. L. Byer. A basket of cappings was placed in a super to be cleaned by the bees, with the above result.

tension of all wires, I "cant" them over between the holes on ends of frames, holding the wire in place with a No. 2½ tack. I do not hesitate to proclaim being the owner and producer of as perfect combs, Jumbo, standard and extracting sizes, as bees can make, and I am only a back lotter at that. I even use 2 horizontal wires in the small super frames, as I have the time, the money and the disposition to have everything just right. But the old "bee man" told me "It won't work; it won't work." His father "kept" bees, and likewise his grandfather—gums, boxes and kegs were the habitations for the bees—"it won't work—won't work, these new-fangled traps." I said to the old "bee man:" "it was not so much the house as who lives in the house," would apply to man, but not to bees. The old "bee man" laughed at my veil and gloves; he never used them, his father didn't, either; they could gather the bees up by the handful (of course they got stung a little, he said), and now this old "bee man" hobbles about with a cane, muscles contracted and joints stiff. (His father got that way, too, he said) poisoned to the core by bee stings. No one is a coward and a fool to use a veil and gloves, rather will he be wise in the end. This old "bee man" came up to see my nuclei yard, and I gave him a chair beside the observation hive and told him that the bees therein were started with a 3-frame nucleus about 30 days ago. I showed him how they had packed the chamber with brood and honey from glass to glass, with the "won't work" system. "Yes," said he, "I have taken a lot of that kind of honey from the gums when a boy." Then the old "bee man" looked out of the window and saw a bunch of young bees that had come out of the hive to frolic and get the "bee line" and he said they were working fine.

## FINDING QUEENS

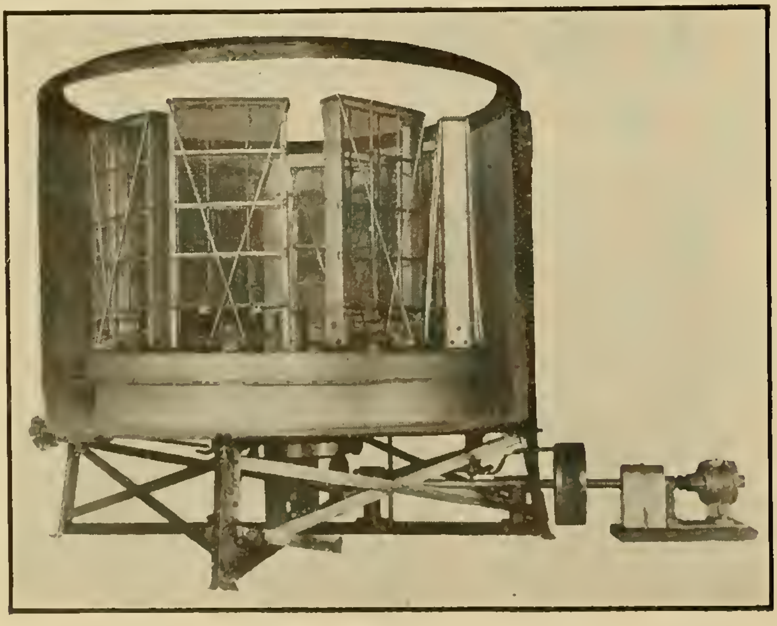
To find queens I would suggest that the beginner have two pieces of gunny sack a little longer than the hive and wide enough to cover the hive and bag down two or three inches on each side. Nail a strip of wood on each side of the sack to keep it in place. Have an empty hive convenient, place the combs in empty as taken from the hive, and keep covered with one of the sacks to keep away robbers and to keep the bees from flying too much. Keep the other sack over the hive, rolling back as frames are removed. In this way far less smoke is required, hence bees are quieter and the queen easier to find.

J. M. CUTTS,
Montgomery, Ala.

## ANOTHER NEW EXTRACTOR

There has been much interest manifested in the extractor described in the December issue of this journal, last year. Another machine which reverses in similar manner, but which is controlled from the bottom instead of from the top, has been built by G. W. Markle, of Brantford, Ontario. The Markle machine has been in use in Canada for two seasons, and one of the most extensive producers of that region is very enthusiastic about it, after extracting something like 50 tons of honey.

Our first illustration shows the extractor with a portion of the can cut away to show the inside mechanism. It will be seen that the entire top of the machine is clear and that all machinery is under the bottom of the can. The baskets are reversed automatically by simply pressing the foot lever. When they have turned half way round, thus exposing the opposite side of the comb, they stop without attention on the part of the operator. The second illustration shows the construction of the reversing mechanism, and also the support of the baskets. The baskets reversing on their centers, turn so smoothly and quietly that one would hardly notice the movement, and there is much less breakage of combs than is the case with extractors in common use. There is a great saving of time since it is not necessary to stop the machine to reverse the baskets, and they can be reversed as often as desired without inconvenience.



Markle's new extractor, with side of can removed to show construction.

The honey when thrown from the combs falls at once into the channel, which can be seen surrounding the machine, and does not come into contact with the operating mechanism. The whole is easily cleaned, since the baskets can be lifted off their supports and the can removed to be washed. Side braces support the baskets, one fastened to each top corner and extending down to opposite corner, as clearly shown in picture.

The principal objection to the machine that is so far apparent is the amount of machinery necessary, which makes its cost rather high.

We believe the planetary system of reversing is the correct principle, and that in time it will entirely replace the old style extractors now in use. Several different inventors are at work along similar lines, and sooner or later the ideal will be reached. Mr. Markle is apparently well toward the head of the procession at present.

## AN OLD LETTER ABOUT BEES

Editor American Bee Journal:

The enclosed letter is from White's "Natural History of Selbourne," a book well known, no doubt, to a good many of your readers, but perhaps not to all. For the benefit of these latter I have taken the trouble to have the letter transcribed, believing you would think it sufficiently interesting to give it space in the Journal.

Very truly yours,
F. X. TIDDY,
Brooklyn, Md.

### Letter XXVII

Selborne, December 12, 1775.

To the Honorable Daines Barrington:

Dear Sir: We had in this village more than twenty years ago an idiot boy, whom I well remember, who, from a child, showed a strong propensity to bees; they were his food, his amusement, his sole object. And as people of this cast have seldom more than one point of view, so this lad exerted all his few faculties on this one pursuit. In the winter he dozed away his time, within his father's house, by the fireside, in a kind of torpid state, seldom departing from the chimney-corner; but in the summer he was all alert, and in quest of his game in the fields, and on sunny banks. Honeybees, bumblebees and wasps were his prey wherever he found them. He had no apprehensions from their stings, but would seize them **nudis manibus,** and at once disarm them of their weapons and suck their bodies for the sake of their honey-bags. Sometimes he would fill his bosom between his shirt and his skin with a number of these captives; and sometimes would confine them in bottles. He was a very **merops apiaster,** or bee-bird; and very injurious to men that kept bees, for he would slide into their bee-gardens and, sitting down before the stools, would rap with his finger on the hives, and so take the bees as they came out. He has been known to overturn hives for the sake of honey, of which he was passionately fond. Where metheglin was making he would linger round the tubs and vessels, begging a draught of what he called bee-wine. As he ran about he used to make a humming noise with his lips, resembling the buzzing of bees. This lad was lean and sallow, and of a cadaverous complexion, and, except in his favorite pursuit, in which he was wonderfully adroit, discovered no manner of understanding. Had his capacity been better, and directed to the same object, he had perhaps abated much of our wonder at the feats of a more modern exhibitor of bees; and we may justly say of him now—

"Thou,
Had thy presiding star propitious shone,
Should'st Wildman be."

When a tall youth he was removed from hence to a distant village, where he died, I understand, before he arrived at manhood.

## THE BEES AGAIN

By Rev. A. A. Evans

I heard a man complain in lamentable voice of the cruel behaviour of his bees towards him. "You can look at the beasts but they go for you. My wife goes on about it, 'I wonder you keep such a strain,' says she; 'they ain't fit to be near Christian people.' Maybe I don't smell right for them. They say there are some folks they can't abide; something in the smell which angers them." I did not smell the speaker, but when an opportunity came, I watched how he went about the job. He took the hive cover off and proceeded to take off the inner boards; but no, he did not take them off; he wrenched them apart; he committed an unpardonable sin, he set the whole hive ajar, and at once I heard the hiss and rumble which presages an army on the wing, and I beat a hasty retreat. But the manipulator had no ears to hear. "There, didn't I tell you so? Aren't they furies?" So they were, and such a handling, frequently repeated, would transform the most amiable of bees into violent viragoes and a common danger. I found that in painting the hives, the parts overlapping, which should be removed without friction, were sticky and glutinous. A little emery paper put this right, but it would take months to restore those bees to a decent temper and a becoming citizenship.

## DO THINGS RIGHT

By A. F. Mead

That article in the July Journal about "Beginning With Bees," has more real meat in it than some whole books. Any beginner, and almost any experienced beekeeper, who will read the article carefully will find it of more value to them than the cost of a year's subscription to the Journal, and I want to emphasize what he says about thoroughness. **Do things right.**

We do not always know what course to take, but if we go ahead and do what we think should be done and be thorough about it, we will not often go wrong. Such a beekeeper will keep things neat around his apiary and will not be obliged to make excuses when visitors or the inspector call. In my work I visited one man with 34 hives, every one set flat on the ground, no attempt made to clean up weeds and grass, and in a number of cases I was obliged to clear away the growth before I could find on which end of the hive was the entrance. Another, with 19 colonies, which had swarmed until he had used up all his empty hives and did not know what to do next, had supers on less than half the colonies where they were needed, giving as the reason for his neglect that he "hadn't got around to it."

I believe one important part of the work of the inspector is to punch up the neglectful ones who will not read and show them something of what can be accomplished if they will do things right and on time. Many of them will be helped by a little good advice, and perhaps assistance, while with others it is plainly evident that the only thing to tell them is to straighten up their cross-combs and box hives and clean up or go out of the business.

Battle Creek, Mich.

## A MATING QUEEN

Yesterday I witnessed an incident, the first of its kind in my more than 20 years at it. As I was looking for a virgin queen, she returned from her mating flight with the male parts attached. Immediately the bees commenced to tug at her, and finally one took good hold and pulled the parts from her. I secured them, laid them on a piece of paper and today they are hard as glass. The queen flew directly on the combs in the mating box as I was looking for her.

C. F. HOSER,

Norristown, Pa.

## NEW BULLETINS

We have received two new bulletins from the Ontario Department of Agriculture. Both are by Prof. F. Eric Millen, the Provincial Apiarist. The first, "Transferring of Bees," contains 12 pages, and goes into detail of all well-known practical methods of transferring. The second, entitled "Bee Diseases in Ontario," contains 24 pages, and is a good resume of present-day information relating to bee diseases.

Those interested can probably secure copies by addressing Prof. F. Eric Millen, Provincial Apiarist, Guelph, Ontario, Canada.

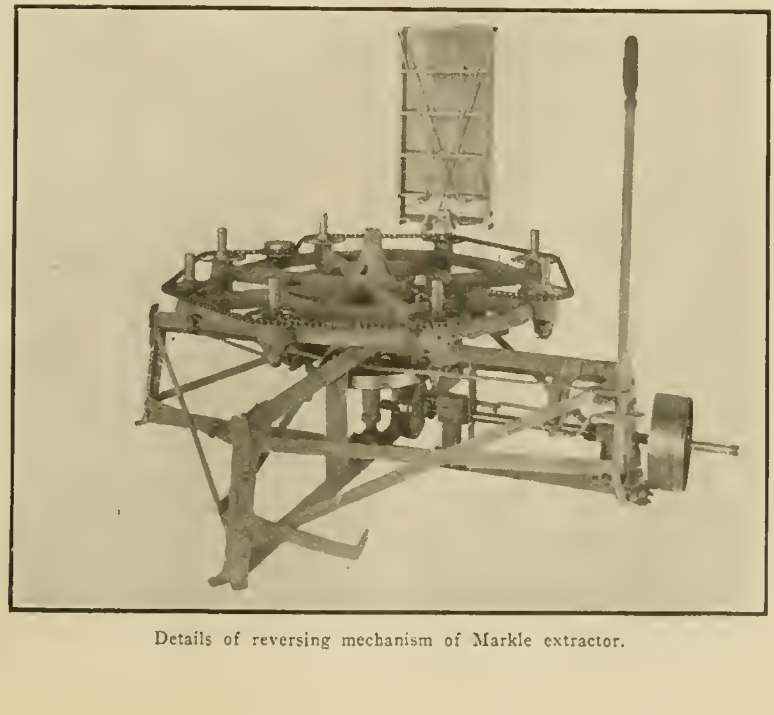
## HAS THIS OBSERVATION VALUE?

By Arthur C. Miller

When examining some cells in nursery cages, from which queens had emerged, large quantities of semi-transparent jelly were observed. The cells (on wooden bases) were replaced and later, when the queens were put into nuclei, all the jelly was found to have been consumed. The cages had an ample supply of honey and sugar candy. Now, why did the young queens eat the jelly? What did they miss in the candy food?

Later, tests were made by putting in fresh cells from which larva had been removed, and the queens consumed that jelly. So, it seemed as if they craved something which candy did not supply. If that was true, how about the health of young queens who had only a very small residue of jelly left in the cells from which they emerged?

As it was not always possible or convenient to supply cells of fresh jelly for the young queens, the matter was ignored for a time, until one day several nice young queens caged



Details of reversing mechanism of Markle extractor.

in a strong stock for longer than usual, were noticed to be feeble or dead.

Then the experiment was tried of mixing the food for the cages with pollen, fresh honey and powdered sugar, making the food moister than usual. Queens on such food did nicely, even though long confined.

Will some queen breeders please observe and report facts as they find them, and perhaps some of our experiment stations can make special studies of the subject.

Bear in mind the foregoing refers to food in nursery cages, **not** to mailing cages.

## QUEEN CAUGHT LAYING IN QUEEN CELL

All during early summer I made increase. I took three frames of emerging brood and one of honey and placed all with adhering bees with about two pounds of bees additional on a new stand, giving a ripe queen cell. A few days later I tallied for the hatched virgin, and in another couple of days for the laying queen.

Weather conditions were good and a heavy flow on, and my operations were a great success. I made over 100 of these new colonies.

One day recently, in looking for a laying queen, I found a queen cell instead, with an egg in it. I was puzzled. The queen was there and seemed to be laying satisfactorily. The cell I destroyed.

When I looked two days later the bees had rebuilt it, and while I held the comb the queen arrived at the cell, poked her abdomen into it several times, with her hind legs outside the cell. Each time she would turn around and look down into the cell, and once she dropped three eggs on the outside of the cell. I replaced the comb and shall observe closely what comes of it.

Evidently the bees were superseding the young queen. It seemed a little unusual to me to have a young queen laying in a queen cell to rear a queen to supersede her. Something I had never read of nor heard of.

JESS DALTON,
Bordelonville, La.

## SETTLING SWARMS

I notice in Dr. Miller's answers the question and answer on settling a swarm flying in the air. I have settled several stray swarms flying over by following them to a plowed field and throwing dirt into them.

This season one of my own swarms pulled out and left before I could finish the job. I followed them a short distance to a freshly plowed corn field and settled them in short order with the dirt treatment.

The queen in the above swarm was a virgin trying to make away with a first swarm, and these same bees swarmed twice, in 30 minutes or less, about a week before, each time returning to the hive, as the old queen would not accompany them.

I would advise the wearing of a bee veil, if one is handy, to any one trying to stop a swarm by this method, as I have never failed to get stung without one. I am a farmer and have been keeping bees for the last five years. My limit is 20 colonies, for I find that a few taken good care of pay well, and that is about all I have time to care for properly.

JACKSON DAVIS,
Kentucky.

## DEATH FROM STING

There was a sad accident here about 10 days ago. A neighbor's little girl, at play, being barefooted, stepped on a bee, or was stung on the sole of her foot (by a honeybee or a hornet, hard to tell). She was taken with spasms. The doctor was called. He could do nothing. The girl died within an hour. The doctor said he never heard of such a case before. I am in my 87th year, writing without glasses.

M. S. SNOW, Puyallup, Wash.

## HONEY ADVERTISING

By H. W. Hailey

The truth of the statement, "There is no royal road to success," has never been questioned, yet D. M. Story, who lives in the fertile Fountain Valley of El Paso County, Colorado, has found that a simple sign on his house by the side of the road has given him a good start on that royal pathway.

This sign, "Eat Honey and Keep Well," was the medium of advertising which sold for this beekeeper 25,000 pounds of honey last year and developed for him a mail order business that takes his honey to a score or more Eastern States. Mr. Story lives on the Colorado North and South Highway between Pueblo and Colorado Springs, a road that is traveled each year by thousands of auto tourists from many States, as well as hundreds of Coloradoans. Some of these people took their honey with them, while others left mail orders for late fall and winter shipments.

Daniel M. Story was born on a farm near Marion, Mich, thirty odd years ago, and it was there, as a boy on his father's farm that he learned to care for bees. There were several hives out in the old orchard, and the robbing of these each fall was to Daniel little short of a miracle. He loved to watch the bees work, and embraced every opportunity to learn something of their life and habits. As he grew to young manhood he continued to study bees, partly because he liked honey and partly because there was a good market for its sale in Detroit and other nearby cities. Then came a siege with pneumonia and lung trouble, and the doctor advised his removal to Colorado, and here begins the story of his success as a honey producer and salesman.

D. M. Story, successful Colorado beekeeper.

It was seven years ago that he came to Colorado, bringing with him several colonies of bees. A homestead claim was staked in the mountain foothills, but he soon saw that if his bees were to produce honey in paying quantities they must be closer to the large fields of blossoms, for the flowers around his sand hills home were few and far between. A small place in the Fountain Valley, a section where there are hundreds of acres of alfalfa under irrigation, was rented. His colonies prospered and increased until today he has 180 of them located at three different points five miles apart, and from these points they cover the valley for a distance of twenty miles.

The homestead was proved up, the rented place purchased, a good house built, but most important of all his health was fully restored. "How did I get the idea of putting out the sign? Well, it was this way:" said Mr. Story. "You see the flowers have to have their pollen carried from one bloom to another in order to fertilize their seed, so they advertise to the bees that they have honey to give away in return for this service of scattering the pollen. Their fragrance is the advertising medium and the honey is the commodity with which they pay for the service. For many years all my honey was sold to the wholesalers, but I found that the margin of profit over the cost of production was not so large as it should be, so I began to think. If the flowers had so successfully found a way to dispose of their pollen, there must be some way in which I could attract buyers, and that sign on the front of my house is the result. You can judge the success of it for yourself, for I sold last year the 11,000 pounds of honey that my bees produced, and purchased 14,000 pounds from other beekeepers in order to supply the demands of my customers, in all more than twice as much honey as I ever sold in one year before."

Mr. Story finds the production and sale of honey not only a lucrative, but an intensely interesting, occupation. "I thought I knew a lot about bees when I came here, but I found that I still have much to learn. Keeping bees here is much different than in the Eastern States. Here we have a very short season of real honey making. The few fruit trees that blossom in May and June give the bees their first activity of the season, but we do not take honey from the hives until about July 20. Then again in August, and sometimes in September, we get another lift. The honey that I take is all from alfalfa and sweet clover. The sweet clover could not be grown here successfully until my bees came, because it would not fertilize, and the fields had to be reseeded each year. So you see the bees not only work for me, but they work for all the farmers in the valley, too."

As there are about forty to sixty thousand bees in a colony, Mr. Story is the proprietor of about 9,000,000 stings, yet seldom gets one himself. "It's very simple," he says, "because bees are naturally friendly and tend strictly to their own business. It is only when they have been disturbed that they get reckless with their stings. I handle them very gently and on most occasions do not find it necessary to use smoke. My experience with them has taught me that they are a good deal like human beings, for they are most tractable when they are well fed."

We have all gazed with amazement on the "Bee Wizard" in the side-show at the county fair; watched him put them in his mouth; let them swarm and hang from his chin like a 2-foot beard; and do other wonderful stunts with them, all of which is very simple if you know how. The secret of it, says Mr. Story, is that the bees are full of honey, too full in fact to double up and sting, and also lacking in the inclination, because they are overfed and lazy.

All men can't be beekeepers, of course, but the man who finds his health impaired and is forced to seek light work, might take a new lease on life and find pleasure and profit in bee culture and the sale of its marketable product — honey. Having taken their cue from Mr. Story, it is reported that the National Beekeepers' Association, of which he is a member, will adopt for its slogan, "Eat Honey and Keep Well."

Colorado.

## WHY APIARY RECORDS?

By Arthur C. Miller

Why keep apiary records? Well, why? What do they tell? Of what use or value are they? Do they lessen labor, facilitate work or reduce cost of operation? And if they do one or all of these things will not the time and labor of making and consulting them more than offset the gain?

I have seen and used many sorts and kinds of record systems and I believe I have a fair idea of their virtues and vices, and when properly kept I am sure their virtues more than offset their vices. Before starting records one must have a clear idea as to what it is desirable to record. If one is searching for breeding stock one sort of information is wanted, if one is playing with all sorts of manipulation another sort of facts must be kept track of, while the busy commercial honey producer needs something entirely different. Let us consider the last and most important case.

Such a man wants to cut corners, save time, lessen labor and his records should be brief, easily read and show at a glance what colonies need to be looked at, when and what for. He does not want to needlessly open a single colony, and when he opens one he wants to know just what to look for. Further, if he must send a helper, he wants to be able to tell him exactly which colonies to attend to, and what is needed.

The first necessity is some method of designating the colonies, and a numerical system suggests itself, so numbers are put on the hives, the hives get moved and interchanged and the number system becomes a confusing jumble. To avoid it, numbering the stands is substituted and that trouble is over. If a colony or a part of one is moved, it is only necessary to indicate it on the record, and no confusion can occur.

The busy man needs to know but few facts, and the better beekeeper he is the fewer items he has to set down. But he wants his records to show two things distinctly, namely, what **has been** done and **what is to be** done. On his first inspection in the spring he wants to know the **fall** condition of each colony. With this information before him a very casual glance into the hives will tell him all he needs to know. If the record shows that a particular colony had abundant food, a young queen and a goodly population, a brief glance into the hive or a glance at one or two combs will tell whether all is well or otherwise. He knows that colony should be strong and booming, and he knows that all he must look for is stores to be sure that breeding has not depleted them too far. In the case of a colony which had a full larder and a young queen, but possibly a little short of bees, or too many old bees, he looks to see if the population has kept up and increased. If it has not, he follows his custom under such conditions. If a colony otherwise normal was a little short of stores in the fall he goes to it prepared to give food in some form. If a colony had an old queen he knows why it has not kept up or increased and he knows what to do. His records show which colonies went into winter quarters small; but with a young queen and plenty of food, and he can instantly put his hand on the one he wants to combine the poor one with, if that is his practice.

The ideal colony first referred to needs little time to inspect or record. He notes that on his next trip that colony will need one or more supers, as his custom or location demands. So we see that a useful record must show conditions as they were, as the colony is one factor, queen age or strain is another, brood condition another, food another and storage room present or needed is another.

All of these things and many more are often set down in long hand in a blank book, and it makes a prideful thing to the keeper, but to the rushed man and to those unfortunates who have to have special glasses for reading, such records are far from a pleasure. Then the abbreviations used are frequently ambiguous and confusing and we often find a lot of non-essential facts which only add to the labor of using the records.

Records kept on or in the hives have their value, but it is limited, and they are too easily moved, misplaced or lost. A book of some sort, loose-leaf or otherwise, seems preferable. I have used for years a loose-leaf book with a special ruling and a simple system of signs and abbreviations. It may not be perfect, probably is not, but it has worked satisfactorily. The principle, however, I think worth passing along for others to try, and they can modify it to suit their fancy or needs.

Each vertical column represents days, while each horizontal space is the record of the colony whose number is on that line. Dates are put at tops of columns only as work is **done.** Records appearing in the next and undated column are of things **to be** done. A glance down the undated column shows at a glance just which colonies are to be looked at, and just for what.

The vertical and horizontal rules cut the page into squares, each of which is for one day's record of one

D. M. Story's honey house. The sign sold 25,000 pounds of honey.

colony. These squares are cut into four lesser squares by other lines and each lesser square is devoted to certain things about the colony so that a notation in that square pertains always to one thing.

The signs and abbreviations used have been developed through experience, and the signs are those intelligible to everyone. Arithmetical signs are very convenient. Plus (-|-) means add; minus; (—) means take away; divide (-:-) means literally divide. The interrogation mark (?) means investigate the conditions of the part designated by the square in which it is placed. The arrow head (>) signifies "to" or "from;" if a number is put at the point of the arrow it means that something has been moved **to** that number; if the number is at the opening of the arrow head it means the thing "came from" that number. A slanting line (\) cancels a record. A circle (O) means the stand is vacant. A check mark (√) means all is correct in the department where it is placed. If it is in the center of the four squares it means that everything pertaining to that colony is as it should be. The question mark in the same place means investigate everything about that colony.

Abbreviation of words confused for a time until certain ones were dropped entirely and others substituted. The following have been found satisfactory: "dq" means dequeen, "re" means requeen, "and" means superseded, "sdg" means superseding, "cl" means cell, "v" means virgin, "lg" means laying, "msg" means missing, "swm" means swarm or "swd" means swarmed.

An "x" placed in the crop square means an extracting super, while a "c" in the same place means a comb honey super. A capital "E" on the line between the brood square and the crop square means an escape-board there, while a zigzag line in the same place means a queen excluder. This zigzag line and the arrow head are the only two signs that are not at a glance intelligible to anyone. Whether a sign means a thing has been done or is to be done depends on where it is, whether in a dated or an undated column. In the case of a swarm it is a little different, because the colony on a new stand may be a swarm or a colony on an old one may have cast a swarm.

There is another factor of great importance, and it calls for the personal element, i. e., your estimate of colony size. Personally, I keep in mind four sizes of colonies, "1" is the best it can be for the time of year, "2" is the next best. Number "1," at the approach of the surplus flow, would be ready for comb-honey supers, while a "2" would only do for extracted honey. A "3" would be big enough to do something on a later flow, or might pay for a little re-enforcing from a weak colony. An "N" stands for a nucleus.

If a colony is not looked at no record is made and the previous record stands. If running out apiaries, or if the apiary is some distance from the shop or store room, a glance down the first undated column will tell just what must be taken to the yard, and extra trips and lost time will be avoided.

At first the record book sometimes gets left at home, but after one or two such experiences it becomes as much one's companion as the vehicle which carries him back and forth. My own loose leaf records are kept in wooden covers, painted a bright red, so they never blow around or get out of sight.

## ALAMEDA COUNTY MEET

The Alameda County Beekeepers' Association was formed in April, 1919, C. W. Hartman and Ralph B. Calkins being the principal organizers, and since that time has held monthly meetings at the Hotel Oakland, one of the most popular hotels about San Francisco Bay. Although no previous report of the meetings of the association has been made, there is no question but that we have one of the best attended and enthusiastic associations, composed principally of "Backyard Beekeepers," in the country. At present writing we have 103 enrolled members and send notices of meetings to more than 200 beekeepers, most of whom are located in Alameda County.

The accompanying picture is of a group in attendance at a field meet at the residence of the President of the Association, Mr. C. W. Hartman, receiving practical instruction in the hiving of a swarm which was accommodating enough to come out during the course of the meet. This field day was the final activity of a convention recently held by the association in cooperation with the University of California, covering afternoons and evenings of three days, and intended principally for beginners. Competent speakers handled subjects of general interest and very good results were obtained, the most important of which being a considerably increased appropriation to the department devoted to beekeeping in the University. Mr. Willis Lynch, President of the State Exchange, being in attendance at the convention, took the opportunity of approaching Dean Thomas Forsythe Hunt in regard to enlarging the scope of the department, and due largely to the enthusiasm in evidence at the meetings, the Dean, we are glad to say, has granted the increase. We believe that if other associations were to co-operate more closely with the State Universities it would be productive of similar results.

The last monthly meeting was held on June 4, Rev. George W. Phillips, nationally, or we might say internationally, known as the sometime manager of the A. I. Root Company's apiaries, being the principal speaker. Dr. Phillips is a magnetic and exceptionally interesting lecturer, and the announcement of a talk by him is always a drawing card.

Much interest was manifested in the story of another member of how he made an extractor out of an old barrel and the gearing of a chainless bicycle.

Taking down a swarm at the Alameda County, California, beekeepers' field meeting.

## NEW ORGANIZATION

At a meeting of the beekeepers of Lucas County, Ohio, at Toledo, on August 4, the following officers were elected for the ensuing year:

President—Dr. Geo. H. Jones:
Vice President—Albert W. Just.
Treasurer—Charles Milroy.
Secretary—R. C. Marsh.

This is a new organization, there having been no previous organization for this county. A great deal of interest was manifested and a rapid growth is predicted for the industry in this section.

For further information address R. C. Marsh, Secretary, R. F. D. No. 4, Toledo, Ohio.

## NEBRASKA BEEKEEPERS TO MEET

A meeting of the Nebraska Honey Producers' Association is to be held at the State Fair on Thursday morning at 10 o'clock in connection with the honey exhibit. This meeting is for the purpose of formulating plans for securing a new bee inspection law and a state apiarist.

O. E. TIMM, Secretary.

### British Columbia Beekeepers

The Beekeepers Association of British Columbia will hold a convention of beekeepers at the Vancouver Exhibition, Wednesday, September 15, at 2:30 p. m. The evening session will be of a social nature, with short addresses on beekeeping topics. Visiting beekeepers from Washington and other States will be heartily welcomed, and are requested to make themselves known to the President, Williams Hugh, Box 20 Cloverdale, B. C.

## A FEW SMILES

By J. F. Diemer

Some people get very much excited when a bee comes near them. A college student who knew more about books than he did about bees, went with me to an outyard expecting to help extract honey. We loaded up with 60-pound cans and 10-pound pails. On arrival at the bee-yard we found the air full of bees working on white clover. I noticed he seemed a little nervous, so I put a good bee veil over his head, telling him that he was perfectly safe. He loaded up with 10-pound pails and started to the honey house. About 10 feet away two tired bees lit on the veil in front of his face; then something happened. Those pails went in all the different directions you could think of, and with his hands he tore my new veil off of his face and made a run that would have made a foot-racer look slow. When I finally got him back to the honey house and got him tamed down a little he did quite well; but he wouldn't go out of the door.

Mr. So and So, here in Clay County, had 40 box hives. They sat close together, and every bee in them was pure German stock. There was about 15 cents' worth of grass growing in between the hives, and he had a blind horse; he thought to save the grass so he could get some revenue from his bees. So he turned the blind horse in among those hot-footed Germans, and the horse, not knowing much about bees, turned the nearest one over. And the bees, not knowing much about horses, and not knowing, or realizing, what the horse was in there for, flew out and gave that horse some pointers on bee-ology; but he didn't seem to become attached to the bees as the bees did to him; and as he was headed to the southwest, he went in that direction. Before he got out of the city limits of that bee-town he knocked over seven more. Mr. So and So said he had a hot time. I should say he did.

While working in an outyard, a stranger passing by, seeing me use the smoker occasionally, wanted to know what that stuff was I was pouring on them.

A first-class box-hive man came into a bee-yard where I was helping to take off some supers, for Mr. Barton, in north Missouri, last fall. He thought he knew all about bees, and could tell some great things he had done in hiving swarms, etc. He wanted to help. I was willing. So I gave him a job putting a super on a pro-German colony, the only one in the yard. He got the cover off, and those half-breeds got busy with their formic acid squirt guns, and you ought to have seen that expert box-hive man go towards home.

I hired a big 6-footer to help extract honey. I told him about some others that had let the honey run over on the floor. He said that I needn't be afraid of him wasting the honey, as he had some sense, he had. In about half an hour the pail was running over. I said, "Sam, the honey is running over." He grabbed up the pail and left the faucet open.

## THE HONEYBEE IN NORTHERN VERMONT

By Mrs. Helen Mathie

Bees are not kept in large quantities in the section in which I live. In my home town there are as many as twenty small home apiaries. In some adjoining towns there are none to be found, while others have a few. From five to forty swarms is about the size, the larger number not being numerous. If there is any bee disease in any of these small bee-yards it has never come to my notice. There have been years when the bees nearly all died, but it was due to conditions, and not to any disease of an epidemic nature, as new bees were put into the old hives and thrived there.

The common brown bee is the rule, or these bees Italianized. There are much fewer full Italians. They are considerably given to swarming, some colonies casting three swarms. Such colonies, of course, do not give their owner anything but bees. When prevented from swarming, they store a good amount of honey. Last season a colony, too weak to swarm, put up 100 pounds of surplus, while others that came out in spring strong and vigorous did not put up a pound of surplus.

The owners of bees in this section are all men with other chief interests that claim the most of their time and attention, therefore they either do not know how to work their bees for supplies, or knowing, do not deem it worth while to spare the time from other work. The average farmer has too many irons in the fire to learn the bee business with any degree of thoroughness.

The chief honey plants are the clovers, the low white in the pastures and the alsike and red in the fields, and goldenrod. Buckwheat is not raised extensively, although most of the farmers having bees raise a small plot. Now and then one sees a small colony of bees in a village, but for the most part they are found on the general farms.

Most of the bees are wintered in the house cellar. Occasionally a man packs them with leaves and winters them out with good success. Wintering in bee-houses does not prove very successful, owing, no doubt, to the great variation in temperature here. One day it may be 40 below zero and within a short time raining. Such sudden changes are not conducive to the health of either bees or people.

The honey of this northern locality has, to me, a much more exquisite flavor than that of warmer sections. The white clover honey, particularly, is very delicately flavored. Perhaps our long, cold winters and cool summers are also in a measure responsible for our freedom from disease.

Section honey sells well. There is practically no extracted honey produced. The consumers here like some comb with their honey, and chunk honey would sell better than extracted. The market is good for all that is produced.

Vermont.

# DR. MILLER'S ANSWERS

Questions are answered in order received. As we receive more questions than we can answer in space available, two or three months sometimes elapse before answers appear.

### Brood Above Excluder

1. If instead of the Demaree plan I put all the brood and the queen above an excluder, what would happen? Would honey be stored below as well as above? If, not, I might arrange an "eke" with excluder zinc on one or more sides at bottom of brood-chamber.

The method is immaterial, but assuming the queen and drones could not leave the hive, what would be the disadvantages? I should be glad if you would tell me exactly what you would expect to find on opening the hive at end of the season? ENGLAND.

Answer.—1. You may depend upon one thing. The bees aim to put their honey, as much as possible, above the brood. The reason of this is obvious. Bees cluster about their brood whenever the weather is cool, and they do not want their honey between them and the entrance, because it is more exposed to robbers. Starting from this, we can still see the bees putting the honey below the brood-chamber when they have no other place for it. But as soon as the queen quits or reduces her laying, the honey will be put above her.

2. We have never tried to confine drones within the hive. If they are thus confined, it is quite probable that the bees will worry them to death when the time comes. They would be in the way. The Demaree plan is good to separate the queen from the brood to prevent swarming preparations, but in the way that you propose, we can see no advantage whatever. Confining the queen within the hive with zinc means compelling all the bees that go into her apartment to pass through the queen excluder. You would probably succeed better in having the bees store honey out of the way of the queen, if you kept her in a story below and left

an opening for free ingress and egress above it. If you have many drones and confine them, better have a drone trap and get rid of them when they try to take flight. I would keep close tab on that colony and see that everything went well with it. Any abnormal management needs close attention.

### Laying Workers—Foulbrood

1. I have a colony of bees that rather puzzles me. On April 24 there was no brood in the combs. On May 1 there were two frames that had about a hundred eggs and young larvæ. They also had a queen-cell. On May 6 the queen-cell had been opened, as if the queen had emerged. But there was no sign of her, and the bees had another cell started and capped over. Now what I would like to know is, what is the reason of this? Are the bees preparing to supersede? That is my guess.

2. In 1917 I bought a queen, and she is about the most prolific queen I have ever seen. In some cells she will lay two eggs. I have her in a standard 10-frame hive and can see no reason for this, unless she is just an exceptionally good queen. She would not do for a breeding queen, as she was not purely mated. Last year my bees had European foulbrood, and in spite of this the colony that was headed by this queen gave 45 pounds surplus and a good swarm. What do you think of that? ILLINOIS.

Answers.—1. My guess is that your colony has a drone-laying worker, or perhaps several, and no queen. The reason the queen-cell was opened was that it contained only a drone, and it died. The one built later will have the same fate. It may be that they have a queen, but in that case the queen is old and no longer able to lay eggs that are impregnated, therefore you should either give that colony some young brood from another colony or unite it with another. Hunt for that queen, if there is one, and kill her.

2. Your experience with foulbrood shows that beekeepers should not get discouraged when they encounter it. In nearly every case, those who have had to fight foulbrood have proven more successful afterwards than before.

### Manufactured Honey

As I am a small beeman and sell most of my honey to my fellow workmen, I bump up against some queer imaginations. One of the men said that three-fourths of all the comb honey on the market was artificially made of parafin wax and syrup, and none but an expert or chemist could detect it. He offered to bet any amount of money on it, for he claimed he saw it made with his own eyes by a Greenville manufacturing company at Greenville, Texas; also a bee supply manufacturing company. I would like to know if any comb honey can be manufactured. MISSOURI.

Answer.—Your fellow workman only repeats what he heard said by others. Some 40 years ago, Dr. Wiley, who has been U. S. Chemist, told that story for a hoax, but it was repeated in many papers, and is still believed by thousands of honest people. There is absolutely no truth in the statement, and A. I. Root, of Medina, Ohio, who is worth several hundred thousand dollars, offered $1,000 for a single comb of manufactured honey. Nobody ever took him up. Your man did not see a manufacturer of comb honey at Greenville, Texas, or anywhere else. He perhaps heard of a comb foundation factory and took that to be a comb honey factory.

There is a very good way in which anyone could tell manufactured combs, if such could exist. As all things made by machinery, they would be all alike, or at least there would be only a few patterns. But if you go to a crate full or a carload of comb honey, you will see that no two are alike, just like the leaves in the woods or the trees of the forest. Anyone who will look at sections full of honey, unless he is decidedly weak in the brain, will readily see that it is impossible to make such a variety of shapes, except in the natural way.

### Weak Colonies

I have two colonies of bees that have been packed in chaff all winter. I opened them the other day and found that most of the bees were dead, but each had a queen. There is an abundance of honey in the frames. I found so many dead bees on the bottom that the entrance was stopped. I cleaned it off and opened the runway. I found one late swarm dead that had plenty of honey. I have two other colonies, one with a fair amount of bees and the other an 8-frame hive full of bees. How would be the best way to build up the weak hives? Could I take a frame out of the strong hive and put it in without injuring the strong hive? Or would it be better to buy bees by the pound? How many would I need for the two hives? I am using 10-frame hives with nine frames in them. Is it a good plan? NEW YORK.

Answer.—The winter has been very hard on bees in your State, and those bees have suffered from long confinement. If each colony has a quart of bees left, it may save it to give it a small comb of brood. Of course it will weaken the healthy colonies, but may pay in the long run, as it will save the queens. If there is less than a quart of bees left in the hive, it would probably be a waste to try to save them. Much depends upon their condition. Of course, buying bees by the pound is a very good way, if you can secure them in time. A pound of bees for each colony would probably be ample, but the more the better.

### Shipping Bees— Division, Etc.

1. I am buying a colony of a friend, which will be shipped by express. He tells me that unless they arrive on a warm day they will all die, because when disturbed they fill up with honey, and unless they can make a flight upon their arrival, they will die. Is this so?

2. About June first, or as soon as I can see that there are queen-cells formed, I will divide the colony by taking 3 frames with at least one queen-cell and place in a new hive on the old stand and move the old hive with the queen to a new stand and place a slanting board in front of the entrance, so that they will notice their new location when emerging. Is this proper?

3. I have purchased everything the Cornell University, of Ithaca, N. Y., advises the beginner to have, including five hives with supers for comb honey. If I buy one or two pound packages of bees would it be safe to put them on the full sheets of foundation, or would they break it down?

4. If I buy nuclei or packages I understand the queen is safely introduced by the dealer before shipping to the purchaser. Is this so? NEW YORK.

Answers.—1. No. If the bees are supplied with enough food, enough ventilation, and are handled carefully enough not to break their combs, they will stand confinement easily a week. They fill themselves with honey when first disturbed, but they finally quiet down, especially if kept in a fairly cool place.

2. Yes, it will do. But you may not find queen-cells with brood in them as early as you expect.

3. The bees of a pound package are not likely to cause the foundation to break down.

4. The queen is usually shipped with her own bees.

### Texas Laws—Transferring

1. What are the laws of Texas, in regard to taking bees into the State? Do bees have to have a certificate of inspection?

2. I have some bees I would like to change. They are in movable frame hives, but the frames are getting rotten; combs are most all straight and frames are regular size. They have lots of honey and brood. Could I put a new hive under, with old frames above and new ones below, with an excluder between them? ILLINOIS.

Answers.—1. A certificate must be secured from the State Entomologist or State Inspector of the State from which the bees are shipped, showing that the bees are healthy. A copy of this must be filed with the State Entomologist of Texas at least ten days before the bees are shipped. The law is very lengthy and you had best write to the State Entomologist at College Station, Texas, to secure a copy and some information.

2. You can certainly put new hives below with the old ones above. But why use a queen excluder? You certainly want the bees to go into your new hives, and the sooner the queens move out of the old combs the better it will be. After the queen goes into the new combs, you can sort out the old combs and save all that are still good.

### Increase—Swarm Control

1. On page 134, "Dr. Miller's Thousand Answers," in recommending the Alexander plan of increase, he advises killing all queen-cells in the second story at the time of placing same on new stand; then to give a cell from another colony. Why is this done?

2. Was the Hand switch lever system of swarm control not a success? I see nothing printed in the bee papers about its being used at present. Please give some reasons for its discontinuance KANSAS.

Answers.—1. On the page to which you refer, I think you will find nothing about killing cells in upper story, but that cells are to be killed on the frame with the queen on the lower story. However, as Mr. Alexander advises, later on cells are to be killed in upper story "unless they are of a good strain of bees that you care to breed from," and then you are to give a queen-cell of other choice stock or else give a queen.

2. The system devised by J. E. Hand was enthusiastically advocated by him as a success, but it never came into general use. You want "some reasons for its discontinuance." I don't know just how many reasons you want, but if I were collecting a set of reasons I might begin by asking you why *you* discontinued it, or why you never adopted it. Like enough you might say only one reason was needed, and that was that you never saw reason enough for using it. Inventions by beekeepers are many, but only now and then does one appear that is considered a success by any but its inventor.

### Increase

I am a school boy just starting to learn bee culture. I have one colony of bees. I am pretty likely to be at school when my bees swarm. I would like to divide my colony so as to keep them from swarming while I am at school. If you think the following plan will work, when would you advise me to do it?

Take half of the brood frames, with the adhering bees and put them in a new hive. Fill the empty space in the brood-chamber of both colonies, with frames with full sheets of foundation in them. Put the new colony on the old stand. ILLINOIS.

Answer.—A good time to operate is when other bees in the neighborhood begin to swarm, perhaps at the beginning of clover bloom. There could hardly be an easier way than the way you outline—simply dividing the colony into two equal parts and letting the queenless part rear its own queen—but it may not work with entire satisfaction. If you put the queen on the old stand there is danger that a swarm will issue with her. Also the young queen reared on the new stand is not likely to be of the best, because all the field bees will go to the old stand, leaving the bees on the new stand too weak and discouraged to rear a good queen. If you put the queen on the new stand there will pretty certainly be one or more swarms from the old stand as soon as the young queens begin to emerge.

You might modify your plan in this way: Take from the old hive and put in a new hive on a new stand two frames of brood with adhering bees and the old queen and shake into this new hive the bees from a third comb, returning the comb of brood to the old hive. The bees in the old hive will be in condition to rear the best kind of queen-cells. About a week or 8 days later let the two hives change places. The old bees from the new stand will go to the old stand, thus weakening the colony so that there will be no swarming allowed, and the colony will be so strengthened that it will do good work at storing.

### Finding Queens—Feeding, Etc.

1. How may I find the queen in my hive? I have looked for her many times, but do not find her. I have hybrid bees; am positive I have a queen.
2. Do capped cells ever sink in after being chilled?
3. Where can I get some pamphlets on the different kinds of foulbrood?
4. Would sorghum be all right to feed my bees?
5. How can I make my bees eat sugar syrup? I put it out for them in front of the hive in a saucer with white cloth over it about 2 feet away from the hive. This was about April 13.
6. In your March number, on page 101, there is an advertisement of paint without oil, by A. L. Rice. Would this be all right to paint bee hives? IOWA.

Answers.—7. If you cannot find a queen by looking over the combs, one after another, shake the bees on a sheet in front of an empty box, just as if you were hiving a swarm. Watch for the queen. If you don't find her, shake them again. You must, of course, smoke them sufficiently before you do that. We never failed to find a queen by this method.

2. Yes, more or less. But they never show holes, as in foulbrood.

3. Bulletin 1084 on American Foulbrood is just out. Bulletin 975 on European Foulbrood may still be had. Both are issued by the Department of Agriculture at Washington. We can recommend nothing better.

4. No; bees will hardly take sorghum, and it is not good for them.

5. Bees will take sugar syrup when there is no honey in the field. But as it has very little odor, they must be attracted to it. Pour a little on a piece of old comb. After they taste it they will come back.

6. We have never tried that paint. It takes a few months' trial to know whether a thing of that kind is going to prove good.

### Queenless Colonies—Uniting

I want to know the best way to save a colony of bees where the queen dies early, say the first of March, and the best way to turn them together and what time of the day. I have had some trouble in this line. I have been spraying them with sugar syrup. I had 9 colonies this spring; now just 6, 3 queenless. ARKANSAS.

Answer.—If the colony is strong in bees and you want to save it, you may be able to get them to raise a queen by giving them a comb of young brood. part of it less than 3 days old, from some other colony. But probably the best way is to unite them with some other colony which has a queen.

It is not a bad plan to sprinkle them with sugar syrup in the evening before uniting them. Then, when night has come, give them a little smoke, take the hive body in which they are and place it right over that of a good colony with queen, with a sheet of paper between the two brood chambers. During the night they will gnaw the paper and unite quietly. If the queenless bees have been fed, they are not likely to be ill-treated by the queenright colony.

A good way, also, is to put a swarm in the queenless hive

### Dysentery

I have two colonies of bees that died of dysentery by eating honey from the brood-combs, mixed with pollen, during the winter. Would you advise me to disinfect the hives and frames before using them again? Is this disease contagious? I do not believe those bees would have died if I had not allowed them to keep that kind of honey. IOWA.

Answer.—As far as our experience goes, that disease is not contagious. Expose those combs to dry air for a while if possible, then give them, one at a time, to a strong colony. They will clean them thoroughly. This would not be advisable in bad weather, and you should not do it until the weather is warm.

In long, hard winters, any honey that contains grains of pollen is objectionable. Many people object to sugar syrup, but we are very much of the opinion that sugar syrup is much the best for long confinement.

### Nearby Fields Neglected

Last year was a lean one for honey in Hawaii. We got very little. In order to help things out for this season, I had a good-sized alfalfa patch very close to the location and gave explicit instructions that none should be cut until fully in bloom. My object was to provide the bees with a close-at-hand supply of nectar, to insure the making for them and make it possible also for them to find their supply without much of a trip. Not a blessed bee has touched it, as far as I have been able to observe, and I have watched the patch very closely ever since the bloom appeared. Miss Bee appears to circle around, squint one eye at the alfalfa and then hike away to other fields. She appers to prefer the long haul. Why is this? I am perfectly willing and anxious to help out, but my bees scorn my help. HONOLULU.

Answer.—My guess would be that it is not the "long haul" the bees are seeking, but perhaps the better crop. Are you sure other patches of alfalfa were yielding honey at that time? I would say that they were working on some other blossoms. Try it again some other time.

### Moths—Care of Combs

1. Four of my colonies died during the winter, some of the combs of which still contained considerable honey. These hives, with the combs, I stacked up near the bee-yard, leaving only a small entrance at the bottom for the bees to get in and out, so that they would clean them out. My bees are in the country and I can only see them about once a week. In looking over them a few days ago I found that they were doing this, but I also found that the moth worms had made a start in one or two of them. Dr. Miller having stated several times in the Journal that the best way to protect them was to give them in the care of the bees, I have been wondering if, in case I try this, these combs could be left there during the flow. Won't the bees be likely to store in them instead of going up into the supers?
2. Will it matter any whether these hive-bodies with the combs are placed above or below the strong colonies?
3. Not being with the bees every day, I cannot depend on natural swarming for increase, but shake when I find cells well advanced. Would these empty combs be all right to shake on ? Some writers advise starters only, but whenever I try this the bees always build too much drone como. PENNSYLVANIA.

Answers.—1 and 2. By placing the combs full of honey of these hives under the brood-chamber of strong colonies, they will probably use up the honey in a very short time. It is quite probable, however, that they are already cleaned out. In that case, just treat them with disulphide of carbon, as recommended in our March and May numbers. They will then do to use for swarms. If you were to place them on top of full colonies, and leave them there, the bees would, of course, fill them again, as soon as the crop begins. They would even fill them if they are at the bottom. This must be looked after.

3. Yes, those combs are good to use for hiving swarms or making divisions. But be sure and do away with the drone comb in them. Also be sure, when you hive a swarm on comb already built, not to give them much room without foundation, as they will be more likely to build drone comb if they have worker combs ahead than if they had it all to build. When you cut out drone comb, you should replace it with worker comb, or the bees will very probably rebuild in drone comb.

### Size of Hive—Cotton

1. What is the exact size of the standard 10-frame dovetailed beehive, measuring length, width and depth of outside of brood-chamber?
2. I notice in the May number of the American Bee Journal that field cotton is spoken of as a honey plant. Please describe its value. MISSOURI.

Answers.—1. Size of broodchamber of 10-frame Langstroth hive, outside: Length, 19⅞ in.; width, 15⅞ in.; depth, 9½ in.

2. Field cotton is not spoken of in equal praise by every beekeeper in cotton regions. Pellett's "American Honey Plants" devotes 3 pages to it. Some say that bees will not work upon it if they can get anything else. Others speak of most of the honey harvested upon it being extra floral, some also being secured from plant lice. Others still, like J. J. Wilder and Louis Scholl, speak well if it. Location humidity and perhaps other causes affect it. That it yields honey both in the blossom and in extra-floral nectaries is not to be doubted. The opinions as to its quality vary a great deal. So we cannot give a positive and definite opinion of its advantages.

### Combs

I had 6 good strong colonies of bees last fall. I wintered them in a small building 8x20, open on the east side. Two colonies were in Woodman protection hives, nothing between the walls. They are in fine shape this spring; no mold in the hives. Four colonies were in Champion double-wall hives, packed with shavings; 2 colonies dead and 2 very weak. Hives were damp and combs moldy. I left about 60 pounds of honey in the hives for the bees to winter on; most of this honey is left. Can I use these combs again, and the honey, or must I destroy them? OHIO.

Answer.—No; do not destroy those combs, unless there is foulbrood in them. We have never known mold to injure bees after winter, when the weather gets warm and the colonies begin to gain in strength. If you will give those combs to good colonies, one at a time, they will soon cleanse them, and it will be a fine help for your new swarms. The only combs that you should destroy are those that contain disease. If we had the Isle-of-Wight disease in this country, this might be bad advice. But in a practice of 55 years, we have never seen any bad results from such combs as you describe, though they would not do to give to weak colonies.

Your experience with heavily packed colonies is similar to our experience of 35 years ago. Methods to recommend for winter depend much upon the climate of the locality where the apiarist finds himself. So we abstain from giving advice on this subject.

### Decoy Hives

1. How is a decoy hive made?
2. How large should it be?
3. Where does it do best, on the ground or in a tree?
4. I have 3 hives of bees and 1 empty one. If I put the empty one near these three would a swarm (from any 3) settle there? NEBRASKA.

Answers.—1 and 2. Any hive suitable to hive a swarm will do for a decoy hive. It should be all ready, with frames and guides of foundation, so that you may not have to disturb the bees when they go into it of their own accord.

3. Most people think it is more likely to be adopted by the bees when it is up from the ground a few feet.

4. You must not expect them to enter it without fail. Decoy hives are only occasionally accepted by the bees, and it probably makes little difference whether yours is near to the other hives or not.

### Answers to Questions

1. After I subscribed to the American Bee Journal I sent in some questions to Dr. C. C. Miller, as I did not know he was sick. I have received two copies of the Journal, but they are not in it. Why?

2. I saw at the top of Dr. Miller's Answers to send an envelope stamped and addressed and you would send the copy it is in. Why is this, when a person has already subscribed ?

3. Will the bees make straight cells when the foundation is slightly bulging out between the wires ?

4. I am going to requeen the first swarm, as the queen is two years old. Should I leave her to lay a few eggs first? If so, how long?

5. How soon will a queen just introduced lay eggs?

6. Will the bees build out on medium brood foundation fast enough for the queen to lay in about 24 hours? (A new swarm). OREGON.

Answers.—1. Answers to questions, whether they come from Dr. Miller or from the editorial room, cannot always be answered the following month. Sometimes we have enough for 2 or more months ahead.

2. You misunderstood the explanation at the head of the Question and Answer Department. Dr. Miller never replies directly to the enquirer. But the editor has undertaken to send a copy of the replies to be published by mail, to the enquirer, if he sends an addressed envelope. This is for the purpose of giving immediate satisfaction to the man who is looking for a reply to his questions at once.

3. If the foundation is bulged, the cells cannot be straight.

4. Yes, it may be best to let her lay eggs for a week or so.

5. The laying of an introduced queen is immediate if she is not fatigued and conditions are good.

6. Yes, usually. But that depends on the strength of the swarm.

### When to Sow Buckwheat

Could you advise me when to sow buckwheat for best results, and who makes a specialty of handling the seed? ILLINOIS.

Answer.—The time to sow buckwheat in Illinois and Middle States is from June 1 to August 1. The seed should be secured from seedsmen, unless you can buy it in your vicinity.

### Mouldy Foundation

I have about 10 pounds of thin foundation that seems to have quite a bit of mould on it. Can this be used in the hives for honey? Or, if not, what can be done to it so it can be used? NEBRASKA.

Answer.—If the mould on the foundation is similar to mould often enquired into by beekeepers, a few minutes' exposure to the sun will cause it to disappear. If the foundation was kept in a very damp place and there is a growth upon it, there may be a little more trouble. Try the sun exposure, but do not leave it exposed long enough to melt it. Spreading it on a clean table will answer.

### Metal Combs—Transferring

1. What do you think about the aluminum honeycomb? Do you think that it is a good thing?

2. Is May too late to sow sweet clover in an old garden? What is the best honey producing, white or sweet clover?

3. When is the best time to transfer a colony of bees that is in an old hive to an up-to-date hive? ILLINOIS.

Answers.—1. Aluminum honey combs have some advantages and some disadvantages. Their success depends principally upon the climate. Try them on a small scale, say a hive or two.

2. It is never too late to sow sweet clover. But what you will sow after this date will probably not sprout till next spring. Better wait till fall. White clover is better than sweet clover, but you cannot grow both in the same soil. Sow the sweet clover in waste land, and in ditches.

3. Questions on transferring have been answered in May, page 170; in January, February and April. The best time to transfer is during fruit bloom. But you can drive the bees out of a box hive at any time during the honey crop, when the weather is warm enough so the brood will hatch. If you drive out the bees and queen and put them in a new hive, the balance of the brood will hatch in 21 days, provided there are young bees enough left in the box to keep the brood warm. Then you can drive out the balance of them and break up the old combs. The bees may be given to the original swarm or to any weak colony.

### State Apiarist—Good Yield

1. Would you please tell who the State Apiarist is for South Dakota? I have a neighbor about half a mile from me who has had bees and has lost them with foulbrood and has left his hives out on the old stand with honey in them. Can he be made to destroy them?

2. Last spring I bought two hives of bees. I got 6 new swarms and 300 pounds of comb honey from all. Is that good enough? SOUTH DAKOTA.

Answers.—1. L. A. Syverud, of Yankton, is bee inspector for eastern South Dakota.

2. 300 pounds of comb honey is good for two colonies, but 6 swarms is too many for best results unless one wants increase more than honey.

### Attracting Bees—Best Race

1. Is there anything known to be of value in enticing or drawing bees to a decoy hive other than a hive with drawn combs or foundation?

2. Which do you consider the best all-around breed of bees for this locality? ILLINOIS.

Answers.—1. No.

2. The Italian bees.

### Uniting

Having a couple of colonies which I thought had been weakened by winter, I followed your advice and put one on top of the other, first putting a sheet of paper between.

I find, however, that the bees do not leave their comb and go into the lower hive-body, which was my intention, as I wanted to use the vacated body.

As they are likely to swarm any time, I would be much obliged for your advice as to how to handle them now. Whether to take the top body off or smoke them out, or what. WASHINGTON.

Answer.—You evidently did not kill the queen of the weaker colony, else they would have united to one another readily.

If they are strong enough that you fear they will swarm, it may be as well to again separate them, especially if they both have brood and queens. But when you examine them you may find them in different condition from your expectation.

If you still want them united, open the top hive, find the queen and kill her. They will join the others without trouble then.

### Old Combs—Honey Plants

1. Is it best to remove black comb and replace with foundation or drawn comb?

2. Can you tell me where I can get the dimensions for a double-walled hive?

3. Is timothy a honey plant? How about vegetables and grains?

4. I started to clip my queen's wings the other day, but on finding her I discovered she had both her wings together on her back. How can I separate them, and what is best to clip them with?

5. What is the best method of hiving a swarm?

6. What stimulates brood-rearing and makes them more active, entrance feeding or over the frames?

7. Should the bees be gone over once in spring and then let alone until time for cutting out queen-cells, putting on supers, etc.? OREGON.

Answers.—1. No; so long as they are perfect worker-combs, their blackness and age are not objectionable. Indeed, the bees prefer old, black combs.

2. Probably from the manufacturers or those who sell them.

3. Timothy yields much pollen, but no nectar. Some vegetables are fine honey-plants, as beans and onions, but are of little consequence in ordinary gardens because in too small quantity. The large bean fields in California are very important. Except buckwheat, I don't know that the grains amount to much for honey.

4. When a queen's wings are at rest they are always folded together on her back. Slip the scissors under the wing at one side, and you will find it easily raised. A pair of small scissors of almost any kind is good for clipping. Embroidery scissors are much used. I prefer blunt-pointed scissors, not because they do better work, but because I carry them safely at all times in my trousers pocket.

5. That's a question for your bee-book, and hardly belongs in this department. After you have had full instruction you will still be guided by your common sense. If your queens are clipped, a good way is to move the old hive to a new stand, set an empty hive on the old stand, and let the returning swarm hive itself.

6. Either way is good. Feeding near the entrance may cause robbing.

7. Depends on your plan of management. Some do not open the hives till time to put on supers, and some open them a number of times, depending on what is to be done.

### Demaree Plan—Excluders, Etc.

1. To what extent do you believe in resorting to the Demaree treatment for swarm prevention?

2. Does the presence of nurse-bees in the lowest story militate against attainment of the rest desired therewith?

3. What, if anything, seems best to do to get these nurse-bees out from that lowest story, especially when one has at least two hive-bodies upon excluder, the latter on that lowest hive-body?

4. Do you believe that with having but the excluder to pass through, the aforesaid nurse-bees would persist in remaining below, when it would seem that they would know even better than any human being that there was brood above? For, do not the nurse-bees just love to be with the brood—or is there no need of them with capped brood?

5. Then again, if the queen under the excluder lays and, of course, soon then larvæ appear, is it not self evident that the nurse-bees would devote themselves to the latter, and so they would have to stay below? Some one asserts that the nurse-bees, if remaining below, are apt to nullify the aim of the Demaree procedure.

6. As to No. 197, page 92, of Dadant-Langstroth, 1911; all I can recognize about brood is whether it is capped or uncapped—of the lines 3, 4, 5, where the respective days are given—which of these lines, embrace one or the other, viz.: capped or uncapped?

7. Addenda: I must acknowledge that the Demaree treatment both in 1918 and 1919 seemed not much of a success, in that while there was honey over excluder, the queens below did next to nothing, and the bees scarcely built out any foundation in the lowest story. The colonies I had last year for extracted honey averaged $10.50; there seemed a fair number of bees, but very little work in the lowest story. I fixed up each colony with a liberal amount of stores, yet "wonder" how they will look this spring. PENNSYLVANIA.

Answers.—1. It is probably the best for the man with small brood-chambers, though the methods for swarm prevention are numberless, and often useless.

2, 3, 4 and 5. The nurse-bees stay below because that is where they are needed. When the brood is capped, there is nothing needed but warmth and, since heat ascends, it is sure to get it. The freshly hatched larvæ need attention until they are sealed. The nurse-bees *must* stay below.

6. From the spinning of cocoon the cell is sealed. Cheshire writes: "At this time (after four days' feeding), its weight (the larva) is scarcely less than double that of the bee into which its natural transformations will by and by convert it. No more food is supplied and the period for cocoon spinning approaches. . . . Before the cocoon can be built, a cover, technically called sealing, is put over the larva by its nurses, that now bid it farewell."

7. Probably the fault was not with the Demaree treatment but with the season. But when there is plenty of room for honey above and lots of brood below, it is natural for the bees to put very little honey near the brood, especially if the weather is warm.

## Metal Combs, Extracting Super Division Board

1. There are so many discussions going on in the bee journals of late about wiring brood frames. We hear about the "money comb," (aluminum comb), which is much advertised and is praised by some beekeepers. The question arises with me as to whether bees will build queen-cells on or in a metal comb. I think not. An idea struck me why our wax foundation manufacturers are not trying to make foundation, *not full comb*, out of aluminum. If this metal foundation is coated with hot wax I do not see why bees should not begin to draw out cells of wax on them. ' This foundation could be wedged to the top bars just a easily as wax foundation. The bottom-bars will need a slit in them to suspend the foundation between the two strips of the bar. The metal must come also in contact with the end bars so bees can wax same to the bars. So we would have a rigid septum for our wax combs, and if they should become old or damaged the wax can be scraped off on either side and the aluminum again coated with hot wax. I painted a piece of bright tin with hot wax and then exposed it to a temperature below zero and found no trace of cracking in the wax. If this was never tried before, will some foundation manufacturer give it a good trial? The contraction of cold and expansion of heat will have very little effect.

2. In a case of shortage an extracting super can quickly be arranged to a section super and placed between sections if three or four strips of wood are laid across the beeways to serve as bridges, and bees will not build combs in the space, but will climb up on the strips to the next super.

3.Is it advisable to put a division-board in a hive and put two weaklings, one on each side, with both queens to lay, and when they build up put a queen excluder on top of hive and a super over the excluder for both parties to meet? Before honey crop, remove one queen, the poorer one, and let the bees unite. Will the bees fight? Of course, I want to make a wire cloth frame division. MINNESOTA.

Answers. —1. The metal comb needs to be tested for 2 or 3 years before positive statements can be made concerning it. In reply to a number of inquiries we had prepared a statement giving the pro and con, the qualities and defects, *presumed*, of this metal comb. Among the qualities we had placed its being proof against mice. But to our great astonishment a comb was brought to us which had been filled with honey by the bees and had been entirely cut up by mice, to get at the honey. So it is useless to try to give the qualities and defects of these combs until we know them ourselves, positively.

As to the foundation of metal, it was tried years ago and abandoned. If you think you have an idea, try it yourself. Similarly, why not try a hive full of those metal combs? You will then be in a position to give the arguments on both sides. But do not be hasty in deciding. Take time to make sure.

2. Your suggestion may work.

3. If the two colonies become strong, I would much prefer separating them and keeping both queens going. But if one of the queens is inferior, remove her at the opening of the crop. The bees will not fight if there is honey in the fields.

## Swarms—Drones

What makes a swarm come out and settle and when hived go on back to the old hive? Are the big black bees the drones? What kind of a looking bee is the queen? SOUTH DAKOTA.

Answer.—If anything is wrong with the queen's wings so she cannot fly, the swarm will return to the hive when they find the queen is not with them. They may continue this daily (provided the queen finds her way back each time) until the first virgin emerges, when the swarm will take French leave with her, if not properly hived.

The great majority of the bees in a hive are workers, and the drones are easily recognized by being so much larger. The queen, when in full laying, looks very much larger than a worker, the greater size, however, being chiefly caused by the larger abdomen.

## Foundation

1. Does it require any honey for bees to draw out comb from full sheets of foundation, as much as it does to make their own comb from beginning, or is the loss of time the only loss when bees have to draw their comb from foundation?

2. If a colony of bees produces 100 pounds of surplus extracted honey in one season when furnished only full sheets of foundation in the surplus apartment, what should the same colony produce if given combs fully drawn out? ALABAMA.

Answers.—1. Yes, there is a loss of material as well as time when the bees are obliged to furnish the septum themselves; and every pound of wax the bees have to furnish means five to twenty times as many pounds of honey.

2. I don't know. It varies, no doubt, greatly. In a very slow yield the difference between foundation and full combs may not be great, but in a heavy flow many pounds of honey may be lost while the foundation is being made into full combs.

## Moving

In moving bees in summer a mile or two by truck, would be sufficient to tack a screen over the top of the hive and nail a board over the entrance? The entrances to my hives are 2 inches, and somewhat difficult to close. Would this be sufficient, also, moving them in October, by truck, 60 miles or more? INDIANA.

Answer.—Yes to both questions, provided the screen be the full size of the top of the hive; only, if the moving be in the heat of the day, and the weather be very hot, it will be safer to have a frame for the screen to be tacked on, so as to leave a space of two inches or so over topbars for the bees to cluster in.

## Queens

1. Sometimes queen-cells are formed at the bottom rim of the comb, in such a way that growth, as it were, against the upper rim of the top-bar makes them curved, especially when they happen to be near a corner. If otherwise such cells appear well developed will they furnish as good queens as cells so situated as to grow without any such obstructions?

2. To what extent is it essential (if at all necessary) that when queen-cells are given from another colony (sealed ones), this should be done in a protector? In giving such cells my practice has always been to give the whole frame with whatever brood there is on it. I can scarcely see how, as just stated, in most cases a protector could be applied.. By protector I mean a West queen-cell protector Or is there another sort of protector meant?

3. I feel tempted to apply the "put-up" plan, with the modification of placing the hive with the queen, one frame of brood and foundation quite a distance away from the hive site, and after the lapse of ten days do as it seems best to me—either give the queen back or not. I might favor letting the bees on the old stand have a chance of rearing a new queen. However, if one chooses to go at returning the old queen, with her bees with her, could she be put back, or would one have to proceed the same as when introducing a new queen?

4. When a hive of brood without queen and with a ripe or nearly ripe queen-cell is left to itself, there not being more than that one queen-cell, to what extent is there danger that there be swarming with first flight of the emerging virgin? PENNSYLVANIA.

Answers.—1. I should expect just as good a queen from a cell forced into a horizontal position, provided there is plenty of room for horizontal extension. If room were lacking to allow the cell to be extended horizontally enough for the queen to grow to full size, the queen might not be so good. However, I never saw such a cell, although I've seen a good many horizontal cells.

2. If a cell is given to a colony just dequeened, or at any time before it has discovered its queenlessness, especially in a time of dearth, unless a protector is given (I don't know of any protector but the West) the bees are likely to destroy the cell. You say you always give "the whole frame with whatever brood there is on it." I don't know that that would make the cell any safer. I half suspect that you mean with whatever *bees* are on it. That would make a difference, and perhaps if a goodly number of bees were adhering there might be no need of a protector.

3. Yes, the old queen may be returned just as safely at the end of ten days after being several rods away. I've tried it a good many times.

4. I don't know to what extent, but I think there is more likelihood that bees will swarm out with a virgin on her wedding flight in case of a nucleus than in case of a full colony, but they will generally return.

## Moving Bees

1. I am contemplating buying about five colonies of bees from a man three-quarters of a mile from here. How would you move these bees? Would the move hinder the gathering of honey?

2. He has the bees in 10-frame dovetailed hives, with shallow extracting super on each. If I wish to run for comb honey will I have to buy other supers? I want to use the 4¼x4¼x1⅞ two beeway sections. MISSISSIPPI.

Answers.—1. You can move them either by horse power or with an automobile. Close the entrances with wire-cloth in the evening, after the bees have stopped flying, or else in the morning before they have begun flying. After setting on the new stands, and immediately after removing the screen from the entrances, set a board in front of the hive for the bees to bump against when they first fly out. This will help to make them mark their new location, so as not to return to the old one. Better not open the entrance too early in the morning. Wait till the sun is well up, or till 9 or 10 o'clock (I am supposing this in warm weather), and if the bees are quiet pound on the hive and set the bees roaring before opening the entrance. The moving will not hinder the bees from gathering afterward.

2. You can use other supers, or you can use the extracting supers by using "wide frames."

## Poisonous Nectar

I moved 26 hives near the jungles and they were getting along fine until about May 5th. At this time I noticed a peculiar action of the bees; they would stand up on their hind legs and would quiver, the tail would cramp up to the body. and on thorough inspection I found them trying to get into a close place where they could straighten out. At first I thought it was a disease, but after inspecting the balance of the hives I found them all acting the same. It appeared that they were cramping severely, and they would quiver to the edge of the landing board and drop on the ground, which was covered with dead and alive bees. The above lasted for two weeks, and I lost almost half of my bees, and three queens during this period. Another thing, it did not affect the old bees only; the newly hatched seemed more numerous than the old ones. I have talked to some of the other beekeepers here and they say they have had the same thing happen to them almost every year, and they believed it to be a poisonous nectar. Have you ever heard of this before? The bees at this time were gathering a very light flow of reddish nectar and plenty of pollen.

BALBOA, CANAL ZONE.

Answer.—It is possible that it may be poisonous nectar, but I doubt it. It looks a good deal like bee paralysis, only you do not mention the peculiar trembling of the wings, which is quite conspicuous. Sorry I cannot give you a more definite answer.

### Age of Queens

1. Can you tell by the general appearance of a queen how old she is, and how?

2. I have my bees in 10-frame hives (Hoffman) and 20 frames per colony at present and use both extracting frames and 4x5 inch sections in the supers; gave one the third hive body a few days ago and they were crowded for room. It has 30 brood-frames and 10 extracting (shallow) frames; no queen-cells even started. What else could I do to prevent swarming? Run in that way in 1919, I had but one swarm in 13 colonies and took 160 to 180 pounds surplus from the best ones. Was that sufficient surplus, or would I have had more if I allowed one swarm?

3. Some three days ago we had one colony that seemed to be trying to swarm, but didn't. The next day there was a dead queen in front of the hive. Was it a superseding of the queen caused the uproar? Five days after that they swarmed. I looked in the old hive and found several queen-cells started with grubs, 3 sealed up and 1 just hatched, and saw a new queen just coming out of a queen-cell. I destroyed all the grubs and sealed-over cells except 2 and took the queen away. No worker eggs in the hive. Would it have been better to let the queen go and take out all the cells? The reason I took the queen away was because I thought perhaps the one from the other cell was in the hive, although I did not see her. This hive had 20 brood-frames, but no super.

4. I have noticed the articles in American Bee Journal regarding wiring of frames. Will enclose sample of wire I use and have no trouble with sagging when four are put in; also two diagonal ones. The diagonal wires are on one side of the foundation and the parallel on the other and the foundation is fastened in *good* at the top-bar. This takes considerable time, but it pays. The enclosed sample of wire is waste with me, being secured in my dynamite blasting work. I figure it costs nothing. I do not know what gauge it is, but if your other correspondent is right in saying use heavier wire, I find it a success, also.

S. DAKOTA.

Answers.—1. Usually an old queen has less hair than a young one; so, like an old worker bee, she is more shiny. She is also less active. But for all that, we have mistaken a young queen for an old one and *vice versa.* Better have your queens marked by clipping or otherwise. Then you will know their age.

2. Yes, that would be very fine. even if you could not average more than half of that, one year after another. There are two or three additional points to help keep your bees from swarming: shade, ample ventilation, few drones, and young queens. You would probably get less honey if you allowed them to swarm.

3. It is very difficult to tell whether they were superseding their queen or whether she died from accident. But it is evident that the old queen died. You would have gained a little time by leaving one live queen in and destroying queen-cells But the difference is almost unimportant.

4. The wire of which you send sample is copper wire, No. 22. Such wire as that would be exceedingly expensive for a beekeeper to use. But the size is an advantage. When it is imbedded by electricity it does not matter whether it is put on one side or on both, as it sinks well into the foundation.

### Molasses for Feed

Would molasses, such as is fed to cattle, be a good substitute for sugar for winter feeding, and how much should it be diluted?

DELAWARE.

Answer.—Molasses may do to feed bees in the summer, if they will take it. But it would not do to have any quantity of it in the combs, as it would be very objectionable if it were mixed with honey. Usually bees refuse to take it, unless they are starving.

For winter, molasses is deadly to the bees, owing to the large amount of foreign undigestible matter which it contains. The bees need the purest honey for winter, or in lieu of it, a syrup made of the very best sugar.

### Unripe Honey

When should a fellow extract honey? Will honey sour if extracted about the 10th of July? What does one do to keep honey from souring?

INDIANA.

Answer.—Extract honey when it is ripe, that is when the bees seal it and its consistency is thick enough to show that it does not contain much water. If it is ripe, it will not sour in the hottest weather. If it is not ripe, it will sour at some time or other. To keep it from gathering moisture and becoming thin again, as it was when gathered by the bees, keep it in a warm, dry place. A cellar is the worst possible place to keep honey. Better have it in the attic, or in a warm, dry room.

**HONEY WANTED HONEY**

Send us a sample of your honey if extracted, state how put up and your price. We are also buyers of comb, can use unlimited quantities if quality and price are right.

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## NEW YORKERS MEET

The annual summer meeting of the Western New York Honey Producers' Association was held at West Valley, N. Y., and was attended by about two hundred beekeepers, and all enjoyed a very pleasant day. Among other prominent speakers present were Mr. E. R. Root, of Medina, Ohio, and Mr. R. F. Holterman, of Canada.

## OKLAHOMA FAIR

The Oklahoma Free State Fair will be held at Muskogee, Okla., the week of October 4-9, 1920.

A large exhibit of products of the apiary and of beekeepers' supplies is desired, and to this end a premium list of $437 is being offered.

Competition is open to the world. Here is an opportunity for beekeepers to advertise their products and help the industry at large by exhibiting honey in its different forms in appetizing packages.

Ask Ethel Murray Simmonds, Secretary of the Oklahoma free State Fair, at Muskogee, Okla. or the undersigned, for a premium list.

ROBERT A. HOLEKAMP,
Superintendent Apiary Department,
4263 Virginia Ave., St. Louis, Mo.

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Copy for this department must reach us not later than the 20th of the month preceding date of issue. If intended for classified department it should be so stated when advertisement is sent.

### BEES AND QUEENS

See Atwater's classified honey adv't.

FOR SALE—Full colonies of Italian bees in 10-frame Root hives, $14 each, 2 for $27.
5947 South Kolmar Ave., Chicago, Ill.

FOR SALE—Bees, Italian; 150 colonies in new 10-frame dovetailed hives, Hoffman frames, full sheets, wired; no disease, $9 per colony as they stand in the apiary here.
J. H. Hall.
7906 Independence Road, Kansas City, Mo.

FOR SALE—50 colonies of Italian bees (3-banded stock) in regulation 10-frame hives. All my bees are, and always have been, free from foulbrood. Address,
Rev. F. D. Brown, St. Maries, Idaho.

FOR SALE—Queens of Dr. C. C. Miller strain; untested, $1.25 each, $12 per dozen; tested, $1.75 each, $18 per dozen. Safe delivery and satisfaction guaranteed.
Geo. A. Hummer & Sons,
Prairie Point, Miss.

FOR SALE—Three-banded Italian queens; untested, $1.25 each; 6, $6.50; 12, $12. Select untested, $1.50 each. Satisfaction guaranteed.
W. T. Perdue & Sons,
R. No. 1, Fort Deposit, Ala.

GOLDEN and 3-banded queens in reasonable quantities by return mail; 1, $2; 6, $10.
Allen Simmons, Claverack, N. Y.

FOR SALE—Goldens that are true to name. Select untested, one, $1.50; 6, $7.50; 12, $13.50; 50, $55; 100, $100.
Garden City Apiaries, San Jose, Calif.

THE ITALIAN QUEENS OF WINDMERE are superior three-banded stock. Untested, $1.50 each, 6 for $8. Tested, $2 each. Select tested, $2.50 each. Virgins, $1.
Prof. W. A. Matheny, Ohio University,
Athens, Ohio.

PURE ITALIAN QUEENS—Golden or leather colored, packages and nuclei; 1 untested queen, $1.50; 6, $7.50; 12, $13.50; 50, $55; 100, $100; virgins, 50c each; packages, 24 and under, $2.25 per pound; 25 and over, $2 per pound; nuclei, 1-frame, $4; 2-frame, $6; 3-frame, $7.50; queens extra. One-story 10-frame colony with queen, $12.
Golden Star Apiaries,
Almaden, near San Jose, Calif.

FOR SALE—Select golden Italian queens by return mail. Untested, $1.50 tested, $2.50.
Wallace R. Beaver, Lincoln, Ill.

QUEENS OF QUALITY—Our Hand-Moore strain of three-banded Italians are beautiful and good honey gatherers. Bred strictly for business. Untested, $1.50; half doz., $8; select., $2. W. A. Latshaw, Clarion, Mich.

FOR SALE—Highest grade 3-banded Italian queens, ready June 1. Queens and drone mothers are selected from stock of proven worth in hardiness, gentleness, honey production and disease resisting qualities. Untested, each, $1.25; 6, $6.50; 12, $12; 50, $47.50; 100, $90. Your correspondence will receive prompt attention, and I guarantee satisfaction.
A. E. Crandall, Berlin, Conn.

WHEN BETTER QUEENS are raised Victor will raise them. Italians, mated, $1.25 each; six, $7; twelve, $13.50.
Julius Victor, Martinsville, N. Y.

FOR SALE—Large, hardy, prolific queens, 3-banded Italian only. Pure mating and safe arrival guaranteed. One queen, $1.30; 6, $7.60; 12, $13.50; 100, $110.
Buckeye Bee Co., Box 443, Massillon, Ohio.

FOR SALE—My famous three-banded Italian queens, $1.26 each, six for $7, from June 1 to November. J. W. Romberger, Apiarist,
3113 Locust St., St. Joseph, Mo.

BOOK YOUR ORDERS for QUEENS now—Goldens, $2; tested, $2; banded, $1.50; tested, $2.60; six or more 10 per cent less.
Clover Leaf Apiaries, Wahoo, Neb.

FOR SALE—Hardy Italian queens, $1 each
W. G. Lauver, Middletown, Pa.

MOTT'S Northern Bred Italian Queens— I have breeding mothers place in the south for April and early May queens. Plans "How to Introduce Queen and Increase," 25c. If you want beauty with the best of summer and winter laying birds, try a setting of my Golden Campines.
E. E. Mott, Glenwood, Mich.

FOR SALE—Superior California Queens—Western beekeepers may now secure our famous Italian queens at the following prices: One untested, $1.25; fifty untested, $57.50; one hundred untested, $100. Orders filled in rotation; first deliveries March 1, 1920.
Edson Apiaries, Gridley, Calif.

FOR SALE—Golden and three-band queens. Untested, April, May and June delivery, $1.25 each; $12.50 per doz. Satisfaction.
R. O. Cox, Rt. 4, Greenville, Ala.

1920 PRICES for "She Suits Me" queens. Untested Italian queen, from May 15 to June 15, $1.60 each. After June 15, $1.20 each; $12.50 for ten; $1.10 each for 25 or more.
Allen Latham, Norwichtown, Conn.

FOR SALE—After April 16, our golden Italian queens, untested, one $1.60 or $16 per doz.; select untested, one, $1.75 or $18 per doz.; tested, $3 each. Safe arrival guaranteed.
Tillery Bros.,
R. 6, Georgiana, Ala.

BEES AND QUEENS from my New Jersey apiary. J. H. M. Cook,
1Atf 84 Cortland St., New York City.

"QUALITY" THREE-BANDED ITALIANS from excellent stock; untested queens, 1, $1.60; 6 for $7.60; 12 for $13.60; 60 for $66; 100 for $100. N. J. James,
1186 Bird Ave., San Jose, Calif.

BEES BY THE POUND, ALSO QUEENS—Booking orders now. Free circular gives prices, etc. See larger ad elsewhere.
Nueces County Apiaries, Calallen, Texas,
E. B. Ault, Prop.

### HONEY AND BEESWAX

See Atwater's classified honey adv't.

FOR SALE—New crop clover extracted honey, two 60-pound cans to case, $30 per case; 5-pound pails, $1.50 each, packed 12 pails to case, or 30 to 50 to barrel.
H. G. Quirin, Bellevue, Ohio.

FOR SALE—Finest quality clover extracted honey, well ripened and of a good flavor, in 60-pound cans, two to the case, at 25c per pound f. o. b. here. Also 500 cases of No. 1 comb honey. J. D. Beals, Oto, Iowa.

FOR SALE—Honey in glass or tin.
W. M. Peacock, Mapleton, Iowa.

FOR SALE—250 gallons of light amber honey, packed in 60-pound cans two in case. Make offer. Vernon H. Jeffries,
Tunica, La.

FOR SALE—About 12,000 pounds extracted clover and basswood honey, in 60-pound cans. What's your offer? Edward Wilbright,
Rt. 5, Box 22, Preston, Minn.

# ONTARIO QUEENS

We are in a position to make immediate delivery of three-banded Italian Queens at following prices

| | 1 | 6 | 12 | 25 | 50 | 100 |
|---|---|---|---|---|---|---|
| Untested | $1.50 | $ 8 50 | $17.00 | $35.00 | $70 00 | $137.50 |
| Select Untested | 1.75 | 10.00 | 20.00 | 41 00 | 80.00 | 155.00 |
| Select Tested | 5.00 | 25.00 | 48 00 | | | |

**RUMFORD & FRETZ**
**BOX 193 SARNIA, ONT.**

LIQUID HONEY—Basswood and clover, 25c lb.
Lake Sarah Specialty Farm,
Rockford, Minn.

FOR SALE—Finest Michigan raspberry, basswood and clover No. 2 white comb, $6.50 per case; No. 1, $7; fancy, $7.50; extra fancy, $8, 24 Danz. sections to case. Extracted, 60-lb. cans, 25c per pound.
W. A. Latshaw, Clarion, Mich.

WANTED—Extracted and comb honey in bulk or tin, or glass jars; also maple syrup.
Paul Thomae 1131 3rd St., Milwaukee, Wis.

GRANULATED HONEY ADS, $1 per thousand; 100, 20c.
Dr. Bonney,
Buck Grove, Iowa.

FOR SALE—About 40,000 lbs. fancy white clover honey; price f. o. b. Kalona, Ia., case, 2 60-lb. cans, 22 cents a pound; case 1 60-lb. can, 23 cents a pound. Sample bottle by mail, 20 cents
J. M. Gingerisch, Kalona, Ia.

WANTED—Beeswax. At present we pay 38 cents per pound in cash and 40 cents in trade for clean, yellow wax, delivered Denver.
The Colorado Honey Producers' Association,
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HONEY—Supply your customers, finest alfalfa-clover honey, extra strong cases, probably ready in July.
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WANTED — Extracted honey. State how packed. Send sample, lowest cash price.
P. Outzen, White Bear Lake, Minn.

FOR SALE—Clover and buckwheat honey in any style container (glass or tin). Let us quote you.
The Deroy Taylor Co.,
Newark, N. Y.

WANTED—White clover or light extracted honey. Send sample; state how honey is put up and lowest cash price delivered at Monroe; also buy beeswax.
E. B. Rosa, Monroe, Wis.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendering.
Fred W. Muth Co.,
204 Walnut St., Cincinnati, Ohio.

WANTED—Comb and extracted honey.
The L. H. Snider Apiaries, Auburn, Ind.

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**"Dadant's System of Beekeeping"**

Ready next month.

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See Atwater's classified honey adv't.

FOR SALE—Sixty 10-frame, standard, lap-joint, double walled bodies; 50 tops, 50 bottoms; good condition, $125.
Roland Adams, Montgomery, Mich.

FOR SALE—25-20 Winchester in perfect condition, guaranteed.
Edward Hogan, Stanley, N. Y.

FOR SALE—Root 4-frame friction drive extractor and honey pump, used one season; complete outfit, $75. Ninety wood and wire queen excluders; some have never been used, 40c each for the lot.
Ed. Swenson, Spring Valley, Minn.

FOR SALE—280 Dadant's deep, loose, hanging brood frames; size 10⅝ in. deep, 20¼ in. wide; nailed and wired for foundation; $30 takes the lot, f. o. b. address. Also 50 Dadant brood frames. drawn comb, at 50c each, 10⅝x 20¼.
Chas H. Sladek, North Chicago, Chicago, Ill.

FOR SALE—Silver Spangled Hamburg chickens; best layers on earth.
Elias Fox, Union Center, Wis.

FOR SALE—Cedar or pine dovetailed hives; also full line of supplies, including Dadant's foundation. Write for catalog.
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FOR SALE—"Superior" Foundation (Weed process). Quality and service unexcelled.
Superior Honey Co., Ogden, Utah.

## SUPPLIES

See Atwater's classified honey adv't.

NOVICE EXTRACTORS. $22. More bargains. Save money.
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60-POUND CANS—150 cases, 2 per case, at $1.60; will exchange for comb or extracted honey if price is right.
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Hutchinson, Kans, 1526 N. Washington.

FOR SALE—Good second-hand double-deck comb honey shipping cases for 4¼x4¼x1⅞ sections, 25 cents per case, f. o. b. Cincinnati; terms cash with order.
C. H. H. Weber & Co.,
2146 Central Ave., Cincinnati, O.

FOR SALE—Good second-hand empty 60-lb. honey cans, two cans to the case, at 60c per case. f. o. b. Cincinnati. Terms cash with order
C. H. H. Weber & Co.,
2146 Central Ave., Cincinnati, O.

SEND us a list of goods wanted and will quote you lowest prices. We are the money-saving house. Price list free. Try us.
H. S. Duby & Son, St. Anne, Ill.

## SITUATIONS

See Atwater's classified honey adv't.

WANTED—Work in apiary by German-American, Catholic. State wages.
C. Prescher, Box 1003, Huron, S. Dak.

WANTED—One or two good queen-rearing men to begin work February 15, 1921.
Nueces County Apiaries, Calallen, Texas.

WANTED—Beekeeper for apiary at Lilly Orchard; married man able to grade and pack fruit preferred. Come and get a job during apple picking and size up the location. Can give work in orchard when not busy with bees
H. W. Funk, Normal, Ill.

## WANTED

See Atwater's classified honey adv't.

WANTED—An extractor in good condition.
W. Winslow Shearman.
Jamestown, N. Y., Route 77.

HONEY WANTED in car load lots or less. Send samples and price.
Chris. Bach, Cathay, N. D.

WANTED—Clover, basswood. buckwheat and amber extracted honey in 60-pound cans.
P. Carter, Box 13, Elmhurst, Pa.

WANTED—White clover comb honey of high grade.
Merton Church,
Highland Park, Ill.

WANTED—Honey, comb and extracted. State quantity and price, and send sample of extracted.
A. W. Yates,
15 Chapman St., Hartford, Conn.

WANTED—Your old combs, cappings and slumgum to render into beeswax. We get enough more wax with our well equipped presses to pay for our work.
Dadant & Sons, Hamilton, Ill.

WANTED—Your order for "Superior" Foundation. Prompt shipments at right prices.
Superior Honey Co., Ogden, Utah.

## MISCELLANEOUS

See Atwater's classified honey adv't.

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FOR SALE—My home place. 53 acres, 200 colonies bees (40 colonies on Illinois River at Florence); all my bee fixtures, my good will in my honey trade. Half cash, balance on time.
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FOR SALE—Two 10-acre tracts of land near Ironton and Pilot Knob, Mo. First tract has 3-room log house with large stone porch, good well, stable and 5 acres in young bearing orchard, vineyard and berry fruits. (Marketed over 500 quarts of berries last season). Second tract has 5 acres under cultivation for farming. Price, including Jersey cow and 4 hives of bees, $1,400, if sold before October.
M. T. Allen, Pilot Knob, Mo.

WRITE for shipping tags and our prices for rendering your old combs, cappings, etc. We guarantee a first-class job.
The Deroy Taylor Co., Newark, N. Y.

BLACK SIBERIAN HARES—Enormous sizes, delicious meat and beautiful fur. Write for information and prices.
Siberian Fur Farm, Hamilton, Canada.

**HONEY** FINEST Michigan Raspberry Basswood and Clover comb and extracted honey. Unexcelled for quality.

"SELL MORE HONEY"

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|---|---|---|
| Crate 6 cases 24 sec. | Fancy Comb | $45.00 |
| Crate 6 cases 24 sec. | A No. 1 Co'b | 42.00 |
| Crate 6 cases 24 sec. | No. 2 Comb | 39.00 |
| Crate 6 cases 24 sec. | Extra Fancy | 48.00 |
| Two cans 120 lbs. | Extracted.... | 30.00 |

*Send Today for Free Sample*

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**"Dadant's System of Beekeeping"**

Ready next month.

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The old reliable three-banded stock bred strictly for business. My select untested are laying before being caged. Price after August 1, $1.50, 12 or more $1.25 each. Tested $2.00, breeders $5.00. Circular free.

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Falconer (near Jamestown), N. Y., U. S. A.

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**QUALITY HILL QUEENS**

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Choice tested "Quality Hill Queens" of pure Italian stock, suitable for testing as breeders to requeen your yards with daughters of this famous strain, are offered beginning September 1.

"Quality Hill Queens" are known to many beekeepers as the result of crossbreeding of imported and fine domestic stocks gathered during months of travel among America's better beekeepers. Orders in rotation only.

Safe arrival, purity of mating and satisfaction.

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**DADANT FOUNDATION**—This has been the standard for over twenty years. Every sheet guaranteed perfect. No bleaching or adulteration of wax. No revolutionary change has to be made to make DADANT FOUNDATION continue to remain what it always has been, the most perfect foundation made.

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**TEXAS HONEY PRODUCERS ASSOCIATION**
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Bee Keepers' Supply Mfg. Plant.
CHARLES MONDENG
BEE KEEPERS SUPPLIES

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Send for my 1920 Catalog and Price List.
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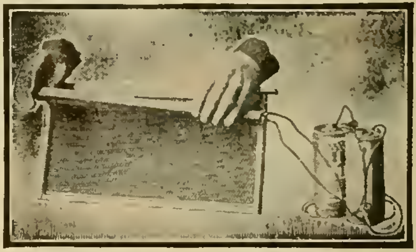

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Actually cements wires in the foundation. Will work with dry cells or with city current in connection with transformer. Best device of its kind on the market.

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PAT JULY 30, 1918

C.O.BRUNO NAILING DEVICE

*Made for the Huffman Brood Frames.* A combined Nailing, Wiring and Wedge Clamping Device. Has been tried and is guaranteed to do accurate work.

PRICE $7.50

Complete directions for operating are furnished with each device.

Manufactured by C. O. BRUNO
1413 South West Street, Rockford, Illinois

## PRICES OF QUEENS

| | Nov. 1 to June 1<br>1 | <br>6 | <br>12 | June 1 to Nov. 1<br>1 | <br>6 | <br>12 |
|---|---|---|---|---|---|---|
| Untested | $2.00 | $9.00 | $16.80 | $1.50 | $8.00 | $14.50 |
| Select untested | 2.25 | 10.50 | 18.00 | 2.00 | 9.50 | 16.00 |
| Tested | 3.00 | 16.50 | 30.00 | 2.50 | 12.00 | 22.00 |
| Select tested | 3.50 | 19.50 | 36.00 | 3.00 | 16.50 | 30.00 |

**Breeders $7.50 to $15.00**

Queens for export will be carefully packed in long-distance cages, but safe delivery is not guaranteed.

"The queen that I got from you last season made honey when the other bees were taking lunch to the fields with them (when they went at all)". H. M. TICHENOR, Centertown, Ky.

2058 Yonge St., Toronto Canada March 19, 1920.

Friend Davis:

The colonies headed by your queens are through this far in fine shape. It was a pleasing sight to see them take their first flight (after 4 months) this last week. What is the price of queens to us folks on this side this year, and when could you start to send me up some? A reply would oblige

Yours Respectfully,

P. F. OLIVER.

**No Nuclei, Full Colonies or Pound Packages.**

**BEN G. DAVIS, Spring Hill, Tenn.**

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We also manufacture **hives, brood-frames, section holders** and **shipping cases.**

**Our Catalog is free for the asking**

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We have in stock an over supply of the following sizes and are offering them at a big reduction—*while they last.* These sections are of a very good grade and mostly standard sizes. For lack of warehouse room, we are sacrificing them at the following low prices:

| | Per M. |
|---|---|
| No. 2—4¼x4¼x1¾, two beeway | $10.00 |
| No. 2—4¼x4¼x1⅞, two beeway | 10.00 |
| No. 2—4¼x4¼x1½, plain or no beeway | 9.00 |
| No. 2—3⅝x5x1½, plain or no beeway | 9.00 |
| No. 1—4x5x1 7-16, plain or no beeway | 10.00 |
| No. 2—4x5x1 7-16, plain or no beeway | 9.00 |
| Mill Run, 4x5x1 7-16, plain or no beeway | 9.70 |

The above prices are net, cash with order. Sold in lots of not less than 1,000.

We are well prepared to fill all orders for Bee Supplies promptly. Send us your inquiries and we will be pleased to quote you our prices. Send us your name and address and receive our next season's catalog and price list when same is published.

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The Old Reliable Three-Banded Italians. The best allround bee to be had. Queens ready to mail April 1. Will book orders now. Will guarantee safe arrival in United States and Canada. Prices for April and May:

Untested,, $1.50; 6, $8; 12, $15
Tested, $2.25; 6, $12; 12, $22.
Select tested. $3 each.

Descriptive circular and price list free.

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723 C Street, Corpus Christi, Texas.

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BEE ESCAPE
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American Bee Journal

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**NASSAU, CO.**

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Write for Price List and Booklet descriptive of

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**Route 3**
**Vincennes, Ind.**

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# QUEENS, SELECT THREE-BANDED ITALIANS

Reared from the best mothers and mated to select drones.

**Prices of Queens**

| | May 1st to June 1st | | | June 1st to July 1st | | | July 1st to Nov. 1st | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 6 | 12 | 1 | 6 | 12 | 1 | 6 | 12 |
| Untested | $2.00 | $ 9.00 | $16.80 | $1.50 | $ 8.50 | $14.50 | $1.30 | $ 7.50 | $13.50 |
| Select Untested | 2.25 | 10.50 | 18.00 | 2.00 | 9 50 | 16.00 | 1.75 | 8.50 | 15.00 |
| Tested | 3.00 | 16.50 | 30.00 | 2.50 | 12.00 | 22 00 | 2.00 | 10.00 | 18.50 |
| Select Tested | 3.50 | 19.50 | 36.00 | 3.00 | 16.50 | 30.00 | 2.75 | 15.00 | 27.00 |

Orders booked now for May delivery. Pure mating, safe arrival and entire satisfaction guaranteed. Wings clipped free. Write for descriptive circular.

**HARDIN S. FOSTER, Columbia, Tenn.**

# Crop and Market Report

**Compiled by M. G. Dadant**

For our September report, we asked the following questions of reporters: 1. How big is the crop? 2. What price are you offered? 3. How is honey selling? 4. What do you expect to realize, wholesale and retail?

### THE CROP

The New England States report about one-half crop for the 1920 season, so far, and New York expects about the same amount, with some better reports. Pennsylvania will have a normal crop, although Ohio and practically all central western States will have a much better crop than last year. This is probably owing to the fact that the crop was a failure last year. Michigan will have a much better flow than last year, but there is a shortage of bees, which will seriously influence the total of honey produced. Wisconsin claims an average of 100 pounds per colony, while Minnesota and Kansas state they will have an average larger than last year, as will South Dakota. Missouri will probably have a better crop than last year, although the honey flow is very spotted. In the Southern States they are expecting to have a very small crop, comparatively, say about 40 per cent of last year, and this pertains generally to Alabama and Mississippi, while Georgia and the Carolinas will have about 75 per cent of last year's flow. The only Southern State showing a big crop is Louisiana, which reports the best crop for years. In Texas the flow will be about normal, except in western Texas, which claims about two-thirds of last year. Both New Mexico and Arizona will fall short of last year, as will practically all of the inter-mountain territory. Colorado claims their crop will only be from one-third to one-half, while Montana claims one-half to three-fourths. In Idaho the situation is similar to Montana. California and the Pacific Coast States will have about an average crop.

### PRICES OFFERED

Big buyers seem to be slow in offering this year, and reporters have sent in relatively few announcements of prices offered on large lots of honey. Most of these offers will range around 18c to 20c for white extracted and 16 to 18c for amber, with a price of from $7 to $8 per case for comb honey. One large producer in Iowa states that he was offered 18c per pound for white extracted, the buyer to furnish the cans. This he accepted.

### HOW IS HONEY SELLING?

Honey is selling well in a retail way. Many beekeepers are reporting that they will soon run out of honey and will have to buy a fresh supply to keep their customers from going elsewhere.

In the wholesale market honey is selling slower, due to the fact that the big companies are not yet placing the new crop on the market. They are holding off to see exactly what crop conditions are going to be. In a retail way honey is selling for a price of about $3 for 10-pound can and $1.60 to $1.75 for 5-pound can. This is for white extracted honey. Comb honey is selling at about $9 per case, retail.

### PRICES EXPECTED

In practically all instances the eastern and central western beekeeper expects a higher price than last year. They expect probably 10 per cent to 15 per cent increase on last year's prices, and none of them is willing to sell for less than 20c per pound f. o. b. shipping station. The fact that they have such an excellent demand locally would indicate that they would hold and get the prices they expect.

The Texas Association is selling their honey readily, and one report stated they only had about 1,000 cases left to sell. They are getting in the neighborhood of 16c to 18c for amber, and 30c for extracted honey packed in 5-gallon cans. The California Association is selling through their distributors at a slightly less price. We know of sales of carloads of amber extracted alfalfa honey from California on a basis of 15c f. o. b. shipping point, while white extracted honey has sold from 16½c to 17½ f. o. b. Los Angeles. These prices are for immediate delivery and remittance. The inter-mountain territory will probably have no difficulty in disposing of their crop this year at fancy prices, as they have usually an excellent grade of honey, which seeks a special market. We understand that the price asked will be in the neighborhood of 20c per pound for extracted, in car lots, and $7.50 per case for comb honey.

Probably the two factors influencing the demand for honey on the part of large buyers are, first, the influx of New Zealand honey and, second, the drop in price of sugar.

In the last thirty to sixty days there have been several carloads of New Zealand honey come into the San Francisco and New York markets. This is being offered in large and small lots at a price varying from 16c to 17½c f. o. b the two points mentioned above.

We also know of the offer of a large lot of amber Chilian honey at a price of 14c f. o. b. Los Angeles.

Sugar has begun to drop. Sugar was selling two weeks ago at 22c per pound and is now being offered at from 17c to 18c, wholesale. Moreover, sugar futures would indicate that it will continue to drop until March, being quoted lower as the season advances. Whether this will have very much influence on the price of honey remains to be seen.

Our idea would be that it will not have a great deal of influence, except that it may cut out some sales to firms who will use sugar instead of honey for sweetening with the lower price of sugar.

We believe, however, that this will be offset by the ever growing demand on the part of the consumer for fancy honey. Many reports coming in from beekeepers would indicate that they will sell their honey crop without any effort and that they will need an extra supply to fill their customers' needs. This is probably due to the fact that the consumer has ready cash and is willing to pay for the articles he wants.

We do not see any indication of a large drop in prices of honey, and the replies of reporters would indicate that they expect the price to stiffen as the season advances. Compared with last year, prices are considerably higher. At this time last year amber California honey was selling at from 12c to 14c per pound, whereas today it commands a price of at least 15c per pound. The white honey report of the Ontario Beekeepers' Association is before us. Its date is July 30, 1920. Their average production per colony is 46 pounds, the reports being received from 470 members, together with reports from Quebec and other provinces. The recommendations of the price committee are as follows, f. o. b. shipping points: Best quality light extracted, wholesale, 27c; best quality light extracted, retail, 32c to 40c. No. 1 comb, wholesale, $7.50 to $9 per case. No. 2 comb, $5.50 to $7.50 per case. The price of 27c wholesale is recommended for honey packed in barrels and for the entire crop of producer.

A New Book, *"Dadant's System of Beekeeping"*

**Ready Next Month. Watch for our announcement**

**MONEY SAVED BY EARLY ORDER**

**SEPTEMBER'S CASH ORDERS**
**DISCOUNTED NINE PER CENT**

**9% OFF**

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Our guaranteed goods will please you. Let us quote on your next year's needs at this time, so that you may take advantage of the Early Order Discounts.

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## That is One Argument in Favor *of* Cypress as a Beekeeper's Lumber

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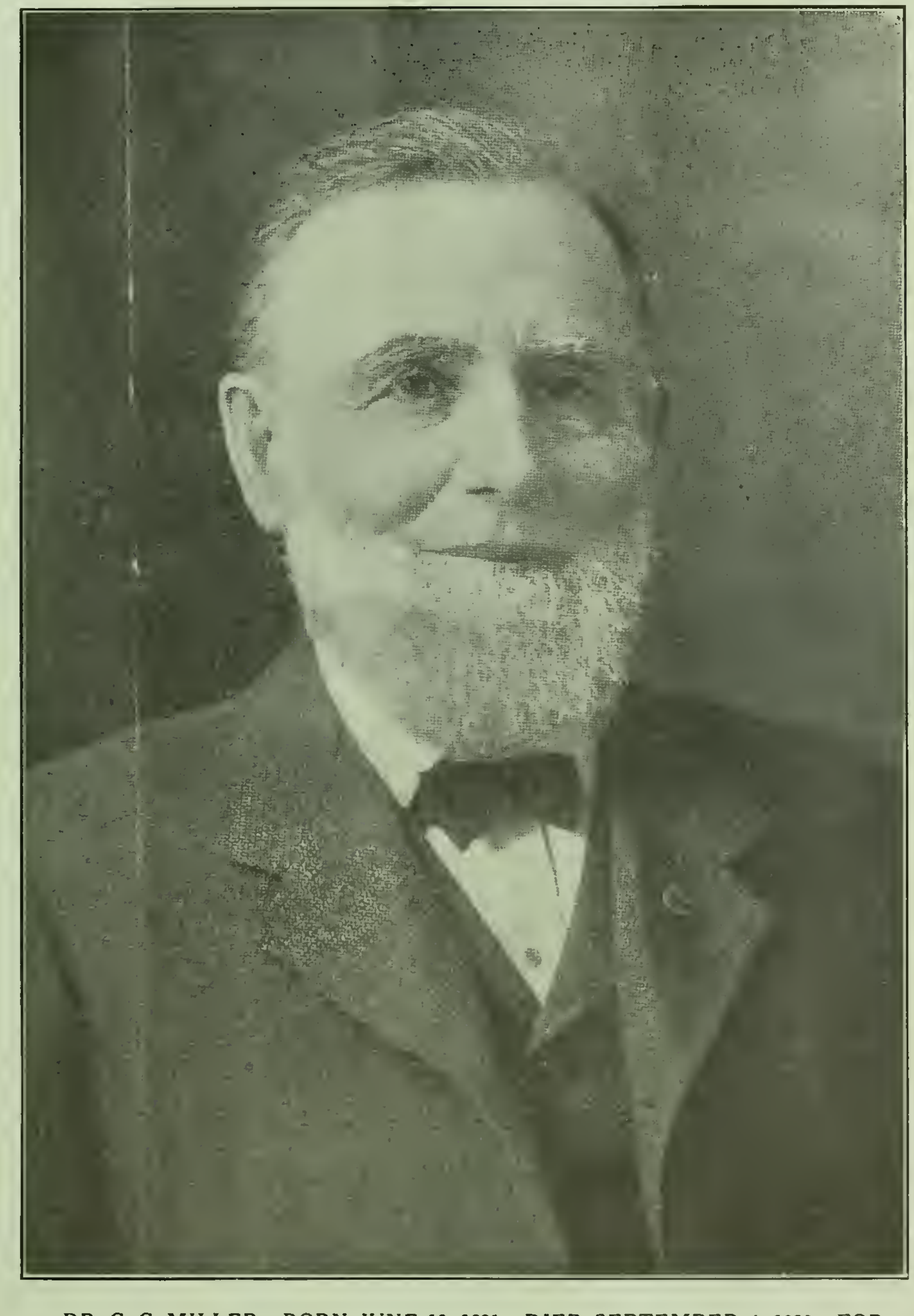

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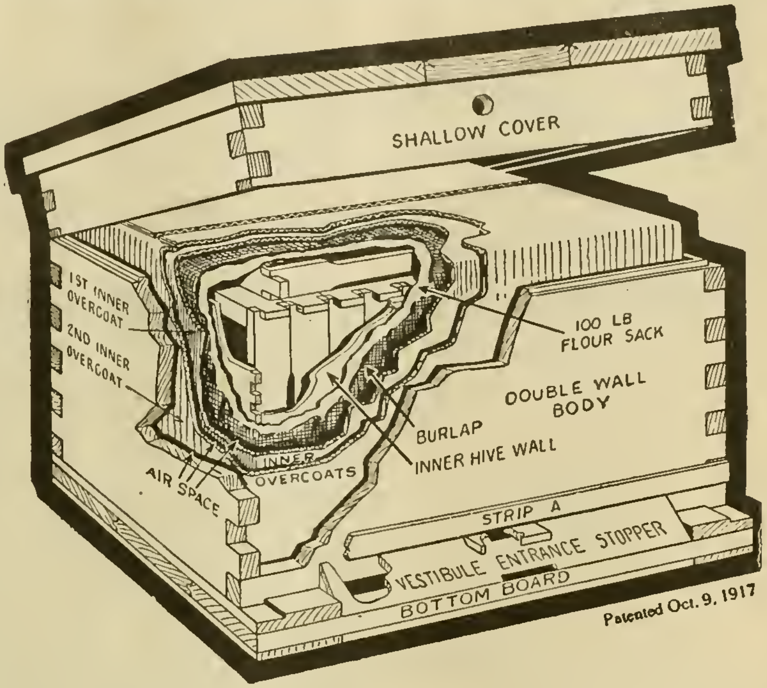

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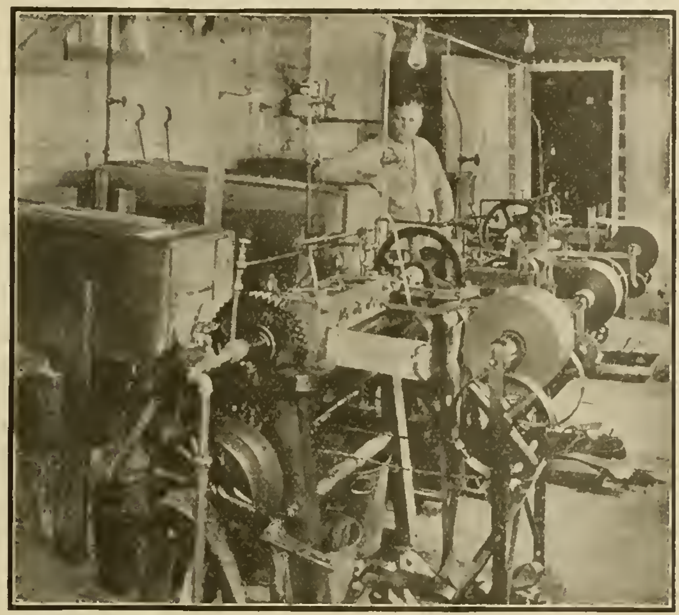

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AMERICAN BEE JOURNAL

VOL. LX—NO. 10 HAMILTON, ILL., OCTOBER, 1920 MONTHLY, $1.50 A YEAR

# A MILKWEED THAT CLIMBS

BY EDWIN G. BALDWIN, PH. D.

PLANTS are as particular as people in their preferences for certain places. Odd, how "picky and choosey" some people are about where they live. There are many representatives of the vegetable kingdom that will grow in very limited localities only and will thrive in still more circumscribed areas. The predilections of plants and trees for their favorite regions of growth are as pronounced as those of the most fastidious humans. For example, the black mangrove refuses to make its abode save where its roots can get a taste of brackish water, south of the 29th degree of latitude. The fireweed (willow herb) refuses to flourish unless its trail has first been blazed by fire; then it straightway leaps forth, Phoenix-like, from the ashes. In a wider sense the same is true of the Tupelo-gum, the pecan and other trees, plants and shrubs.

Probably no plant is more particular about its habitat than the **Gonolobus,** or vining milkweed. There are several species of the genus, but the one of special interest to beekeepers, for reasons to be stated later, is the **Gonolobus laevis,** the type-species of them all. Very little information about the vine can be obtained from the botanical books in the public libraries, or even from the more specialized volumes of the university departmental collections. The average work in botany is content to state something about as follows:

"The plant occurs rather frequently along river banks from Pennsylvania, west to Kansas and southward."

The single phrase "along river banks" gives the reader only a very general impression of the favorite habitat of **Gonolobus** and a still more limited idea of the exact regions of its growth. It was during two years spent in extension work among the beekeepers of Indiana that the writer first became interested in the vining milkweed and its commercial importance as a honey plant. But the absence of any adequate data on it, and even the lack of knowledge among the beekeepers generally regarding its value as a honey producer, stimulated the writer to begin a systematic study of the vine and its value, habits and habitat; of its vicious qualities as well, for it is not an unmixed blessing. Several articles have appeared regarding the vine as a honey producing plant, and the readers of the various bee magazines have been told that there is such a honey producing plant as the vining milkweed, but the regional differences have not been emphasized nor clearly defined.

**NOTICE**

**Beginning October 15th, the subscription price of the American Bee Journal will be $1.50 per year..**

**All subscriptions mailed before that date will be entered at the present rate of $1 per year.**

### The Plant

Many of the members of the milkweed family are valuable to the beekeeping fraternity as nectar secreting plants, but the vining milkweed seems to be the only one to yield surplus honey in any quantity. It is a true vine, and yet a real milkweed. In luxuriant growth it is almost equal to the rank Kudzu recently imported from Japan. The huge seed pod, filled when ripe with fluffy, downy seeds that float on the lightest breeze, would convince anyone that it is a milkweed. The inconspicuous flowers, bluish white in color, are in striking contrast to the broad, dark green leaves, to the giant seed pods and to the coarse, rank vine. The leaves are heart-shaped, not unlike those of the large species of **Convolvulus,** or morning glory.

### Its Habitat

On suitable soils it grows wondrously, thriving best in alluvial lands along fresh water courses, especially along bottom lands of river courses, where inundations are frequent. While it is occasionally reported as growing on hillsides and in thickets and fence corners, its real home is the rich, black loam of the overflowed lands.

It has been reported as found growing in West Virginia, notably in Putnam and Mason Counties, and abundantly about Charleston, W. Va., on the banks of the Kanawha River. Ohio reports it through the southern part of the State, it being found most abundantly in those counties bordering the Ohio river, viz.: Washington, Scioto, Brown, Clermont and Hamilton, and also in a few counties farther north, Montgomery, Ross and Warren. In Kentucky it is very common, being most frequently met with in the northern part of the State bordering the Ohio River. It has been reported from Henderson, Louisville, Ludlow and Owensboro, for example, along the river just named; also from Tyrone, on the Kentucky River, from Versailles, Woodford County. It is occasionally found as far east as Natural Bridge (Wolf County), and at Harlan, in Harlan County, both places being in the foothills of the Blue Ridge Mountains. Bowling Green also reports it in Warren County. Tennessee is not favorable, apparently, to the plant; in fact, the heads of the Department of Botany in both Vanderbilt University and Peabody College there report that they have never seen the plant growing in the State; moreover, Gattinger makes no mention of it in his "Flora of Tennessee." But the curator of the Herbarium at the Missouri Botanical Gardens in St. Louis, Mr. J. M. Greenman, says they have one specimen of **Gonolobus** in their museum, from Knoxville, Tenn. It is probably sporadic in the State; in fact, we should expect that it would not thrive save possibly along the western line, near the Mississippi River lands.

In Indiana it has been found growing as far north as Knox County, along the Wabash and White Rivers, and the tributary streams there. One specimen has been sent in from Jackson County, Indiana, but the plant never spreads there, for the land is hilly and unfavorable to the growth of the vine, in the vicinity of Brownstown, where the one specimen was found. It is in the counties of Gibson, Posey and Vanderburg, in southwestern Indiana, and in the counties of southeastern Illinois and northern Kentucky, across the Ohio and Wabash Rivers, that the overflow lands offer ideal soil condition for rampant growth. The plant has been reported from Wabash County, Illinois, bordering on the Mississippi River, from Pulaski County, from Pope and Pike Counties in the extreme southern part of the State.

West of the Mississippi River it is reported in Missouri at St. Louis, at Columbia on the Missouri River, and at Courtney, Alba and Harlan. It is reported at Webb City and Orange, in the extreme southwestern part of the State. Oklahoma reports it from Kay and Harmon Counties, bordering on the southern line of Kansas. The writer has found it reported only at Hot Springs, Arkansas, but it is probably found elsewhere in the State. In Texas it is found very common in Austin and eastward, generally on low ground, only occasionally on hillsides. Specimens of **Gonolobus laevis** also are found at Granbury, Tex. Other species of the plant are reported in Texas as far west as Limpia Canyon, in the Trans-Pecos region. It has been found in New Orleans, La., along the Mississippi river, and at Alexandria on the Red River. In Georgia it has been seen growing at Saffold, on the Chattahoochee River, and in Florida in the Duval, in the northeastern portion of the State.

* * * *

A glance at the accompanying map may make the extent of the growth of **Gonolobus** more clear to the eye geographically.

It is at once apparent that the vining milkweed is native to the south central portion of the middle west, that it is at home on fresh water lowlands; that it is not coastal, but loves inland rivers and lakes, but not the sea. It is also clear that its appearance in rugged, hilly sections is exceptional, and that on such soil it has no tenacious hold and, finally, that its real habitat is in rich, black loam, especially such as is subject to inundation. One feature is most suggestive, for a careful study of the river courses along which its growth is recorded reveals the fact that the water courses are the Mississippi River and the streams that are tributary or ultimately tributary to the Mississippi. For example, the Kanawha River in West Virginia flows into the Ohio and the Ohio into the Mississippi; the Miami River in Ohio, the Kentucky River in Kentucky, the Wabash between Indiana and Illinois, the Missouri River in Missouri and the Red River in Texas and Louisiana are all tributary to the Mississippi. It looks as if the limits of the native haunts of **G. laevis** were almost identical with the boundaries of the "Father of Waters" and his far-flung tributary streams. A few other specimens of **Gonolobus** so far reported may possibly be taken as occasional or accidental. However, the geography of the region covered by the plant is certainly full of suggestion.

### Commercial Importance

The soil of the overflow lands already mentioned in southwestern Indiana is undoubtedly the one place suited above all others to the development of the vining milkweed. The cornfields of that region, thousands of acres, forming an almost unbroken sea of green, are especially favorable to the growth of the vine. It not only needs wet ground for its best growth, but it needs wet weather as well, though it blossoms best in dry weather. In wet seasons, when the corn is difficult to till, the vine grows and thrives, seeming to laugh its defiance in the faces of the baffled planters. So rapid is its growth that even after the corn is laid by, in May or early June, the vine can still attain maturity by the middle of July. So dense is its growth in favorable soil that, to use a phrase often heard in those parts, "If you take hold of one corn stalk, you can shake every stalk in the field." The sprawling vines cover the tops of the cornfield, fairly forming a carpet of dark green leaves above the sagging corn.

Bluevine or climbing milkweed.

### The Name

The botanists call it sand vine or Enslen's vine. The local nomenclature is vastly more rich and varied. Some call it dry weather vine, others devil's shoestring, others blue vine. Occasionally, by confusion, it is termed wild cucumber, but the latter is an error. Finally, the name wild sweet potato vine is heard. No guarantee is here given that even this goodly list of vernacular names is complete.

Previous to the spring of 1918 the writer could not learn the correct name of the plant from even those beemen who knew the value of the plant as a honey producer. None seemed able to identify the plant, and few beekeepers outside of its densest growth ever dreamed that it was valuable as a honey plant. Occasionally short notices of it would appear in the Bee Journal. In the Spring of 1918 the Department of Agriculture at Washington identified the vine as the **Gonolobus lævis,** or vining milkweed.

### The Yield

Small though the blossoms are, they are extremely rich in nectar under proper weather conditions. Dry weather during blossoming time is absolutely essential to nectar secretion from **Gonolobus.** Then the nectar is secreted so copiously that it seems impossible for any number of colonies to overstock a location. A hard rain after blooming is well started, ends nectar secretion for that season; at least subsequent yields are small in comparison. Hence, the local name "Dry Weather Vine." The name blue vine is undoubtedly suggested by the tiny bluish flowerlets. It is easy to guess who gave the name devil's shoe string. Let the weather hold hot and dry and the bees roam amid the blossoms from early morn until late at night. A daily gain of four pounds has been recorded on a hive scale for a period of 15 consecutive days during the summer of 1919. One beekeeper secured a yield of 75 pounds per colony from 60 colonies in five weeks time. It is a very sure yielder if the weather is dry , as it usually is during July and August.

### The Honey

What kind of honey is produced from **Gonolobus**? In color it is almost clover white, of fairly good body and very aromatic in flavor. It does not granulate readily, even in cold weather, but it has one peculiarity that marks rather than mars the product. When thrown from the extractor, or even while being uncapped in the comb, tiny bubbles appear all through the honey in a way very suggestive of fermentation. In this respect it resembles the honey from the Cabbage palmetto. In neither honey is the characteristic bubbling due to real fermenting. The reason has never been satisfactorily given. This peculiarity is noticeable in the honey from the vining milkweed, even after bottling. At first it takes on a milky or cloudy appearance; a cloudiness that reappears whenever the honey is shaken up, but which disappears when the honey is allowed to stand. Slight heating quickly drives off the bubbles and restores transparency.

The taste would probably rank it with the best of table honey anywhere. Most of those who taste it for the first time are enthusiastic over it, and pronounce it "the finest ever," but, of course, superlatives are easy. In point of time throughout the cornfields mentioned above **Gonolobus** is followed by the one-seeded burr cucumber **(Sicyos Angulatus),** which also yields a white honey and blends easily with that of the earlier vine.

The vine seems to have given commercial importance to beekeeping in the entire area wherein it grows only along the confluence of the Wabash and Ohio Rivers near the point where Indiana, Kentucky and Illinois meet. That region is indeed a land flowing with milk (weed) and honey. In the region last named it offers great possibilities for migratory beekeeping from the higher clover levels to the bottom lands. The moving of the bees there, is not over long distances; it can almost all be done in auto trucks a dozen or twenty miles at most. Good returns await the man who knows how. No other States or sections in other States, so far as known, have given any commercial value to **Gonolobus** as a honey producer.

### A Warning

Some beemen are writing to secure the seed of the vining milkweed and some beekeepers have sent it on request. It should be noted that from an agricultural viewpoint the vine is a pest of the worst sort. When once it gets a foothold in the proper soils it seems ineradicable. Good weed laws would put a ban on the distribution of the seed altogether, but, unfortunately, most State weed laws cover only Canada thistles and occasionally wild carrot and white daisy. However, the great fears sometimes expressed regarding the weed as a pest, while no doubt well founded in southwestern Indiana, are no doubt exaggerated in regard to the most of the area from which it has been reported. For in all the area of its distribution it has become a real menace to the farmers in only the one area named, and conditions for its best growth are rarely found.

---

## TWO QUEENS WITH A SWARM

By Rob't A. Greene

A few days ago a good-sized swarm issued from one of my colonies and clustered on a low apple limb. As soon as I discovered them I shook the cluster into a bushel basket and dumped them into my "swarm hive," which I always keep ready. I saw the queen, a three-banded Italian virgin of good shape and color, as she passed in. About half the bees stayed in the hive and half went back to the tree. I repeated the process of shaking into the basket and pouring into or in front of the hive five times at intervals of about an hour before the majority of those bees would remain in the hive and not return to the tree.

I didn't understand it, but the next day, when I cautiously went through the hived colony, I found a solution. The large Italian queen was found on the bottom very much excited over something the bees were balling. A puff of smoke revealed a second queen, somewhat smaller and darker, lying on her back in a dazed condition, but kicking and piping faintly. Her body swelled slightly and she died a few hours later.

I suspect that two queens, hatched at about the same time and having, of course, the same hive odor, took flight with the same swarm. One was hived at the first shaking; the; other eluded me for several shakings, and each time regathered her followers. The next day the queens met, probably for the first time, in the hive which each believed to be her own domain. Had I peeped in half an hour sooner presumably I would have witnessed the royal duel.

It was, to me, a remarkable instance of the automatic working of the natural law of the survival of the fittest.

New York.

(It frequently happens that two or more queens will be found with a swarm, although it is more likely to occur with afterswarms than virgins emerging about the time the swarm is leaving the hive to fly out with the bees.—Ed.)

---

### ANOTHER KINK

In a recent article in one of the bee magazines I saw an account of how one beekeeper protected the wood of his frames from the cutting of the wire which tended to make the wire sag, using shoe eyelets.

This was efficacious, but having no eyelets, and not being able to get them immediately, I cast about for a substitute, and found one, as follows:

Drive slender brads into the sides of the end pieces, letting them go through the holes. If, now, the wire is passed through the holes so that the pressure will come on the brads the wood is protected, and there will be no sagging of the wire.

A. F. BONNEY.

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### REMEDY FOR STINGS

I have read of using hot water for bee stings, as well as some other remedies. I tried a number of remedies and finally decided that the only cure was in prevention, until I tried blowing hot smoke directly on the point where the sting entered the flesh. Hot smoke relieves the pain, and for many years I have not tried any other means of relief. The hotter the smoke the better.

O. K. Rice,

Gray's River, Wash.

(The associate editor has used the same means with good results for several years.)

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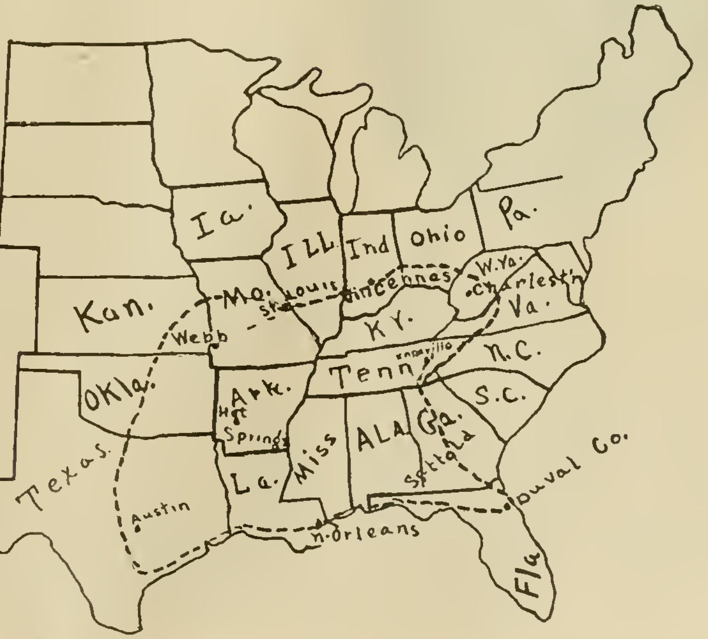
### SUMMER MEETING

The annual meeting of the Northern Illinois and Southern Wisconsin Beekeepers' Association will be held in the court house in Freeport, Ill., on Tuesday, October 19, 1920. All interested in bees are invited to attend.

B. KENNEDY, Sec.



Map showing regional limits of bluevine or climbing milkweed.

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THE STAFF
C. P. DADANT ........ Editor
FRANK C. PELLETT ........ Associate Editor
MAURICE G. DADANT ........ Business Manager

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# THE EDITOR'S VIEWPOINT

## The Nestor of American Beekeeping

It is with both **sorrow** and **pride** that we record the demise of the venerable man whose features adorn our front cover page this month, Dr. C. C. Miller, who was probably the most prominent figure in the apiarian world. Sorrow, because we lose the advice and help of a man of great capacity and good judgment and a good friend. Pride, because he left behind him, with us, a reputation untarnished by any blur.

Dr. Miller had an international fame, being known almost as well in Canada, in Europe, in Australia, in New Zealand, in **any** foreign country, as in the United States. His teachings have been quoted in every country where progressive beekeeping has made its way. He was the author of four books: "A Year Among the Bees," published in 1885; "Forty Years Among the Bees," published in 1902; "Fifty Years Among the Bees," published in 1911, and "A Thousand Answers to Beekeeping Questions," compiled and published, in 1917, by M. G. Dadant, from his answers to questions in over 20 years of the American Bee Journal. The first article from his pen, on beekeeping, published in this magazine, in October, 1870, written on "Introduction of Queens," shows that he had already, 50 years ago, some experience with bees, and indicates the careful methods in which he persevered for more than 50 years.

Doctor Miller as a young man.

The great strength and influence of Dr. Miller over the reading public were due to his being always ready to say: "I don't know," rather than give a doubtful statement. He had a witty manner in replying to absurd questions that made his answers entertaining, without in the least angering the enquirer. Very few men have such winning ways. His private correspondence showed even more wit and greater consideration than his published statements and made delightful reading.

During the months of January to March 1916, the American Bee Journal published Dr. Miller's personal recollections, an autobiography. From this contribution, we glean the following facts concerning his life:

He was born July 10, 1831, at Ligonier, Pennsylvania. His education was acquired first in the public schools, then successively at Jefferson College, Cannonsburg, Pennsylvania, and at Union College, Schenectady, New York, where he paid his way, boarding himself, so that at times his board expense "did not exceed 35 cents per week." Those were not profiteering times, it seems.

He finally became a teacher and afterwards studied medicine with a Dr. Sheridan, at Johnstown. He went west, was graduated an M. D. at Ann Arbor, Michigan. Later he went to Earlville, Illinois, then to Marengo, where he began beekeeping and remained the rest of his life. He was married twice, his second wife, Sidney Jane Wilson, survives him. He leaves one son, who, however, takes no interest in bees.

Dr. Miller was a great musician, a composer of both church and lay tunes. We have from him several beekeepers' songs, the stanzas of which were written by the late poet-beekeeper, Eugene Secor, of Iowa: "Songs of Beedom," "The Beekeeper's Lullaby," "The Hum of the Bees in the Apple-tree Bloom," 'Buckwheat Cakes and Honey."

Dr. Miller also wrote numerous articles for other magazines, such as Gleanings in Bee Culture, and for many years editorials for the American Bee Journal, when it was published by Geo. W. York, in Chicago. Mr. York was the man who first called him "The Nestor of American Beekeeping"; but he also was known as "The Sage of Marengo," during the later years of his life.

Sick only a short time, our friend retained his self-possession until the last two days, when he became delirious and his face was much drawn with pain. But just as he drew his last breath, a change passed over his face, a beautiful smile came to his lips and his whole countenance was changed.

It is human to regret what we lose. But in this case why should we mourn? He was over 89 years at his death and had had a span of life given to very few men. He was useful to the last, since some answers to questions were found in his typewriter after his death. He did his duty to all, and after a short illness left a beautiful memory. The good wishes of the entire bee family, in both hemispheres, will go to his wife, his relatives and friends.

Dr. Miller at 54.

## Duration of Development of Insects

The "Bulletin de la Societe Romande," of Switzerland, in its August number, reports that Dr. Arnold Pictet, of the University of Geneva, made some 1,500 experiments and observations, upon the influence of atmospheric pressure upon the length of development of insects, during their metamorphoses, and especially during their nymphal life. According to these, the greater atmospheric pressure increases the duration of development, while a lesser pressure hastens it. These experiments are described in the Bulletin de l'Institut Genevois of 1919. The influence of atmospheric pressure upon bees might be ascertained in similar studies.

## Troubles of the Queen Breeder

The associate editor has recently visited a number of queen breeders in Tennessee and Mississippi and found that they have been working under difficulties the past season. The honey-flow has been very poor, making it necessary to feed sugar almost constantly, in many cases. There has been so much rain, also, that they have often found it impossible to work with the bees for days at a time. Under such conditions the number of good queen cells built would be greatly reduced, from what could be secured. under favorable weather conditions. Even at best the queen breeder can never tell in advance how many queens he can furnish at a given date. Orders were accepted with the best of intentions and with the full expectation of being able to send the queens forward promptly. With bad weather the orders were of necessity delayed or money returned to the great disappointment of the customer, and yet through no fault of the breeder. Until one has had actual experience in rearing queens he can never fully realize the problems which the breeder has to face.

While it is very trying to be unable to secure bees or queens bought and paid for months in advance of the time when needed, we hope our readers will bear in mind the difficulties of filling such orders at a particular time and give the queen breeder a fair chance to make good any complaint before taking it up with us. We use every precaution to make sure that every advertiser is reliable, and want to know in case any fail to live up their agreements, but give them a fair chance to make good before complaining.

## A Letter From the Caucasus

It is with great pleasure that we give herewith the translation of a letter received from Professor Gorhatcheff, which will show better than newspaper articles what the conditions are and have been in those countries. It appears that the countries of the Transcaucasus have formed into republics, and so this letter was stamped with the postage of a new government, the "Republique Georgienne." The letter follows:

Tiflis, July 15, 1920.

Mr. C. P. Dadant.

Honored Sir: It was a matter of great pleasure to me, the other day, to receive the April number of the American Bee Journal, two letters from your office and three letters from American beekeepers enquiring into the possibility of importing Caucasian queens into America. It is almost five years since I have been able to correspond with Europe and America. Even today we have no postal service with central Russia.

You may imagine my joy before those first swallows coming from a civilized country. Being in the habit of perusing each month some 20 Russian bee magazines and a dozen foreign ones, I am truly starving for the intellectual food which I secured from this special literature.

Your green-covered American Bee Journal for April, bearing a portrait of Moses Quinby, has given me as much pleasure as must have given the dove with its olive twig plucked off, to Noah in his ark. I believe that you, as well as those of our American colleagues who take interest in bees, will be glad to get some information concerning us.

None ot the branches of farming industry was as much injured, during that period of war and revolution as was beekeeping. The best modern apiaries were destroyed and in some regions beekeeping is no longer extant.

From the information that I can secure irregularly, it appears that the apiaries of the north of Caucasus, down to the countries of Kouban and Tersk—those Californian bee councountries, are also devastated.

But beekeeping is a phœnix, and it comes to life from its ashes in the midst of revolution fires. In the Transcaucasus, that is to say in the newly organized republics of Georgia, Armenia and Azerbijan, we recognize at present a growing interest for beekeeping. The requests for bees and bee appliances come in large numbers. Thanks to the intensification of rural industry in the Transcaucasus, beekeeping is likely to secure there an honorable position. During the past two years the crops were excellent and the apiaries which were miraculously spared yielded an extraordinary crop, several apiaries yielding 4, 5, and even 8 pouds (The poud is equivalent to about 36 pounds.—Editor) while usually one poud, taken from each colony, is considered a good crop.

In closing, I will quote to you the prices now current in Tiflis:

A poud of honey (36 pounds), 4,000 to 5,000 rubles; former price, 8 to 12 rubles.

A poud of beeswax, 6,000 to 8,000 rubles; former price 18 to 24 rubles.

Comb foundation, English pound, 300 rubles; former price 32 to 40 rubles.

Dadant hives, 1,000 to 1,200 rubles; former price, 8 to 12 rubles.

Honey extractor, 10,000 to 12,000 rubles; former price, 24 to 30 rubles.

(The ruble, normally worth 51½ cents, is very much depreciated at present. It is not now quoted on the financial markets.—Editor.)

Just now, central Russia cannot be reached by way of the Caucasus. But commercial transactions are getting arranged with France. Transcaucasus has great need of commercial exchanges with America, and those would be more easily organized than with Europe.

Accept my best wishes,
C. A. GORBATCHEFF.

## Loss of Bees in Shipping

In buying bees in packages shipped by express, the customer should always make sure that in case any considerable part of the bees are dead on arrival, that the agent makes note of the fact on the express receipt before paying. Too often beekeepers make claims against the breeders for loss in shipment, yet because of their failure to have the agent note condition of bees on arrival, the breeder is unable to secure settlement from the express company.

We believe that all our advertisers are reliable and will make good any losses for which they are responsible. The express company is responsible for losses in transit, and unless the facts are noted on express receipt the shipper has no recourse.

## Parcel Post Extracted Honey

We are in receipt of a 5-pound can of extracted honey of excellent quality from R. A. Bray, of Big Timber, Montana. The honey came all the way without any wrapper. The top was fastened on in what is, to us, a novel way. The friction top was simply fastened down with 3 small nails, driven through the can at the top and bent down on the depressed surface of the lid. Honey, put up in this way and carefully wrapped in corrugated pasteboard, can probably travel safely from one end to the other of the United States.

## Extracts

J. E. Crane, in July Gleanings, says: "I do not know at present of an apiary or a colony in our State (Vermont) where American foulbrood exists." As they have had considerable foulbrood in Vermont, that is an evidence of what may be achieved with methodical action and perseverance.

"A colony which has built cells appears more unwilling to accept a new queen than one requeened as soon as dequeened.—Elmer G. Carr, of New Jersey, in Gleanings for August). Same here, Mr. Carr. For safe introduction we do not want the colony queenless a single minute.

## Fifty Years Ago

Fifty years ago the beekeepers were using large space in the discussion of the best kind of hive. Many hives of many kinds which attracted much attention then have long been forgotten. The Thomas hive, the Economic hive, Gallup's hive, the Excelsior hive, the Diamond Frame hive and dozens more have long passed from public notice. Fifty years ago the extractor was just coming into use and frequent articles about "The Honey Slinger" appeared in the magazines of that date. The control of queen mating was a live subject then, and now and again some one appeared with a sure method.

Some subjects which have been discussed for fifty years are still unsettled. Size of hives and deep vs. shallow frames were the cause of much argument then as now.

Fifty years ago Langstroth, Quinby, Charles Dadant and Henry Alley were frequent contributors to the American Bee Journal. Dr. C. C. Miller is about the only man who was writing for this Journal at that time who continue to do so until the present. In the issue for October, 1870, there are two articles from his pen.

# OBSERVATIONS ON AMERICAN FOULBROOD

By G. F. White, B. S., Ph. D., M. D., Bureau of Entomology, U. S. Department of Agriculture, Washington, D. C.

Many beekeepers are driven from the profession and many prospective ones are deterred from entering it on account of the losses that result from the bee diseases. As a remedy for this condition it is proposed that the beekeepers, both active and prospective, become as familiar as possible with the facts which are known about these disorders.

American foulbrood is responsible for greater losses than any of the other diseases. It has been studied for a considerable number of years and in the present article* are given some of the observations noted, which, it would seem, might be of interest to all beekeepers.

### Name of the Disease

The history of the period before Christ shows that bees at that time died from virulent diseases. It is not possible now to determine definitely the number and nature of the bee disorders that existed then, but it is quite probable that all of the infectious ones of today occurred. By what names they were then known is not clearly recorded. Earlier than three and a half centuries ago a destructive, foul-smelling brood disease of bees was being referred to as "foulbrood."†

The name "foulbrood" has been applied probably almost from the beginning of its use to more than one disease. Numerous descriptions under this name occur in the beekeeping literature, which emphasize the ropy and foul-smelling symptoms of the disease. American foulbrood, therefore, is one of the diseases which have been described as "foulbrood" and it still is usually meant and interpreted when the term "foulbrood" is used alone. Since there are two especially important and very different "foulbrood," two names were needed to designate them. In the different countries different names have been chosen and are being used. Probably all of those selected are more or less open to criticism. The name American foulbrood is being used in this country at the present time for the disease which is characterized by the death of brood in capped cells, ropiness and foul odor, and the name European foulbrood for the one which is not so characterized.*

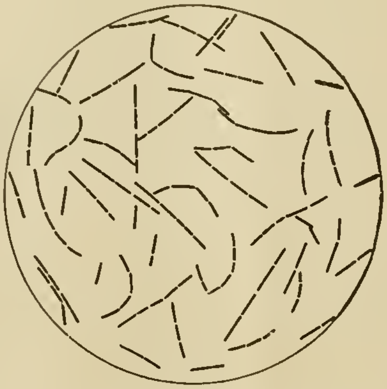

Fig. 2.—*Bacillus larvae*, growing form.

### Cause of American Foulbrood

American foulbrood occurs at least in Belgium, Denmark, England, France, Germany, Switzerland, Austria, New Zealand, Canada, Cuba and in many parts of the United States. From this distribution of the disease it follows naturally that its presence in any locality connot be attributed entirely to food or climatic conditions.

No race of honeybees, as far as is known, is entirely immune to the disease. Worker, drone and queen larvæ are susceptible to infection; the adult bees are not.

The inciting cause of the disease is a germ which is called **Bacillus larvæ.** When this parasite is added to honey or syrup and fed to a healthy colony the disease is produced (Fig. 1). It is a small rod-shaped plant (Fig. 2) that can be seen only by the use of a microscope, and then only when it is magnified 600 diameters or more. It produces spores, which are somewhat like seed (Fig. 3). These spores (Fig. 4) are so small that if 20,000 of them were placed end to end, they would measure only about one inch. They live over long periods and are very difficult to destroy, either by heat or chemical disinfectants.

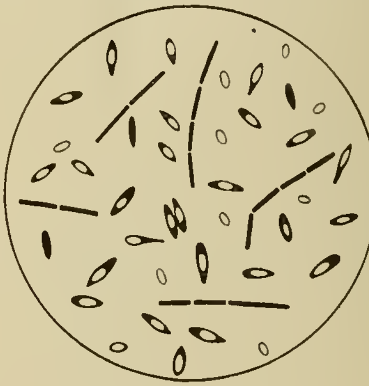

Fig. 3.—*Bacillus larvae, spore formation.*

The spores are taken into the stomach of the larva with the food. They then germinate, and the growing form of the parasite reaches the blood and other parts of the body. This causes the larva to become sick, and in about one week to die. Sometimes the pupal stage is reached before death takes place. The body of each dead larva and pupa (Fig. 5) contains millions of spores. These are capable of producing the disease should any of them reach healthy larvæ and be eaten by them.

### Symptoms of American Foulbrood

Inasmuch as the practical apiarist is interested in the colony rather than the individual bee, it is well in discussing the symptoms of any bee disease to consider the colony as the unit. Any evidence of disease that is obtained from a larva, pupa or adult bee is, in fact, a colony symptom. The death of brood or adult bees is frequently the first symptom that is noted. In the brood diseases it is only the brood that dies; the adult bees do not even become infected.

In American foulbrood the brood is almost always capped before it dies. This is due to the fact that the germ does not cause death until one week or more after the feeding larvæ con-

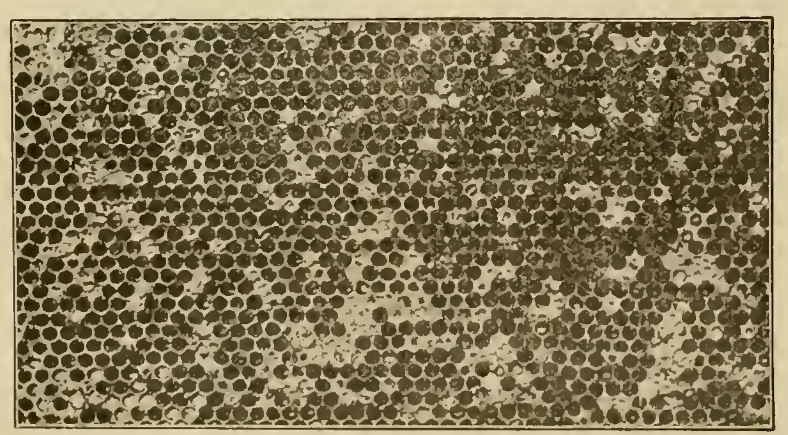

Fig. .1—American foulbrood produced experimentally.

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* Bulletin 809, American foulbrood, U. S. Dept. Agr., March 10, 1920, may be referred to by those who desire a fuller discussion of the work done than is given in this article. The technical parts of the bulletin may easily be omitted by the reader who is interested primarily in the more practical portions of it.

† Colonel H. J. O. Walker, of Lee Ford, England, informs the writer that a German beekeeper, Nicholas Jacob, wrote of foulbrood in a book on beekeeping published in 1568.

* By employing the names which are being used in this country for these two diseases, the writer is expressing no opinion as to the best ones which have been suggested and used. A previous discussion of names for the foulbroods occurs in an earlier article in the American Bee Journal, July and August, 1920.

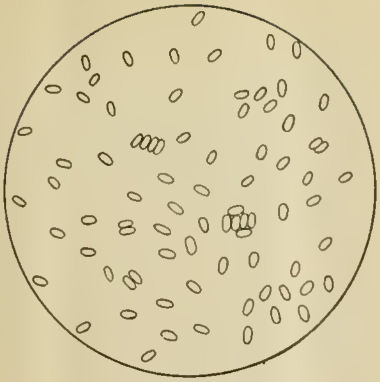

Fig. 4.—Spores of *Bacillus larvae.*

sume food containing it. Since such food is not fed to the larvæ until they are two days or more old, the larvæ almost always reach the two-day quiescent period preceding pupation, or have become young pupæ, before death takes place (Fig. 5). The dead brood in this disease, therefore, almost always occupies the endwise position in the cell.

In American foulbrood there is no sign or symptom known by which one can determine definitely that a larva or pupa is sick until death is very near or has actually taken place. The first symptom to be noticed is that the diseased larvæ or pupæ are slightly more opaque than the healthy ones. At this time they are probably dead. During the decay of the dead brood (Fig. 5) the outward appearance of the larvæ and pupæ changes from that of healthy brood to that of the dry scale. This change is gradual and covers a period of a few weeks, varying somewhat with the climatic conditions present.

The bodies of the larvæ and pupæ, after death, soon soften and the body wall is then easily torn. As the decay continues, the mass becomes viscid, and later so ropy that it can be drawn out into fine threads 2 or 3 inches or even more.

Within a short time after the brood dies it becomes slightly brownish and this color deepens to chocolate, mahogany, and coffee shades as the decay advances.

At some time during the course of the disease the characteristic foulbrood odor * occurs in the colony. It is not noticeable early in the disease and is usually not detectable when only a slight mount of disease is present. It tends to disappear from the brood combs when they are removed from the bees and, after being cut out of the hive for a considerable period, it ceases to be marked and is often scarcely observable. This fact has contributed somewhat to the misunderstanding that has prevailed in many quarters regarding the odors accompanying the two foulbroods.

The adult bees remove the caps from many of the cells containing dead brood (Fig. 5, L, M, Q, R, T). This results in the irregularity in the distribution of the capped and uncapped cells (Fig. 1) so commonly seen in the brood nest. Many of the caps are only punctured (Fig. 5, K) by the bees, while many more remain unaltered (Fig. 5, F).

The decaying brood masses frequently come in contact with the caps and adhere to them if the combs are roughly handled. When the combs are placed in certain positions the viscid masses may pull the caps into the cells, resulting in what is spoken of as sunken caps.

During the early stage of decay, bees remove in a piecemeal fashion portions of the dead brood, leaving remnants (Fig. 5, L) about the brood nest. This symptom is sometimes useful in making an early diagnosis of the disease. Sometimes the bees gnaw slightly the viscid remains and scales. A comparatively small amount of the brood dead of this disease, however, is removed by the bees.

**Length of Time the Germ Lives**

Since **Bacillus larvæ** is the inciting

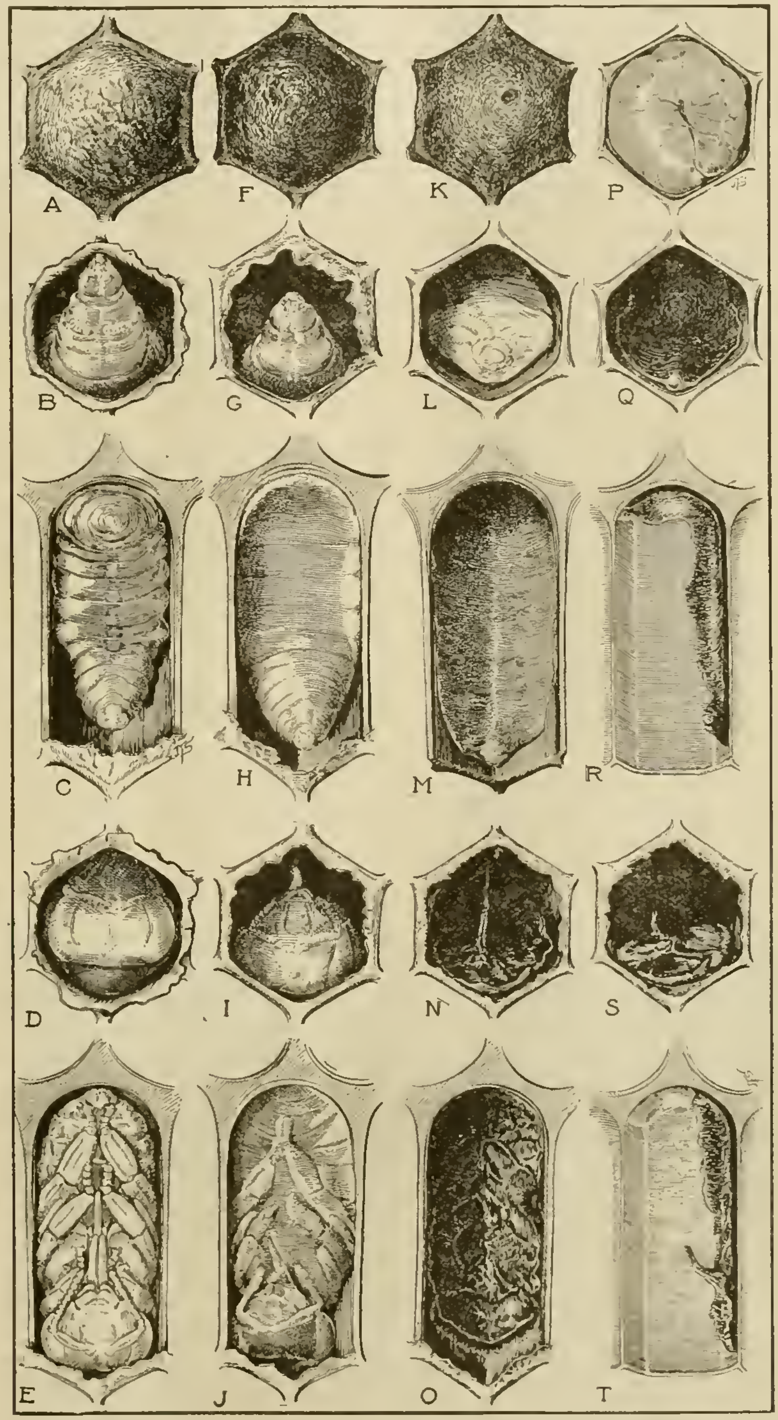

Fig. 5.—American foulbrood. A to E healthy and F to T diseased brood; A, cap over healthy, and F K over diseased brood; G H larvæ and I J pupæ dead of the disease; Q M R, scales of larvæ, R being cut lengthwise and N O S T pupæ dead of the disease, T being cut lengthwise; K, a punctured cap; L, a partially removed larva which died of American foulbrood before reaching the age at which brood is capped. This occurs only occasionally.

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* The odor so frequently mentioned in connection with foulbrood has been variously described, being often compared with that of a glue pot. When once learned it can scarcely be mistaken. It is very distinctive, being unlike any other. The writer, therefore, prefers not to attempt to describe it by comparing it with other odors, but to call it simply the foulbrood odor.

cause of American foulbrood, naturally this disease can occur only when the germ is present and alive. The task of preventing the disease by keeping the living germ away from the apiary is not an easy one, although much can be done in this direction. The length of time the germ will live under various environments is, therefore, of first importance.

Some idea relative to this point may be gained from experimental observations which have been made. Scales containing the spores of American foulbrood were collected in 1907 and kept in the laboratory until September, 1916. Each succeeding year, during this period of more than 9 years, tests were made, using some of this scale material, and in every instance the spores were found to be alive. It was found, also, that they were as resistant to heat, and, by the inoculation of the colonies, they were found to be as virulent at the end of this period as at any previous time. It has not yet been determined how long the spores will remain alive in the dry scales, but it is quite probable that they will live much longer than 9 years.

When the spores from the scale material were suspended in water and heated to boiling (212 degrees F) they were all killed in 11 minutes. A half hour or more may be necessary when they are in honey. By employing a higher temperature the period of heating may be diminished.

A water suspension of the scales was poured in a thin layer on glass plates and allowed to dry. These films were exposed to the direct rays of the sun. The spores were found to remain alive for from 28 to 41 hours. They remained alive from 4 to 6 weeks when they were suspended in honey and exposed to the sun.

The spores added to honey and kept away from the direct sunlight were found to be alive and virulent after one year. It is very likely they are capable of remaining so, a very much longer period, in such an environment.

In the presence of fermentation the spores were found to be alive and virulent at the end of 7 weeks, and it is quite likely they would have remained so a very much longer period.

In a 5 per cent carbolic acid solution the spores of American foulbrood remained alive for months; in a 1:1000 mercuric chloride solution, for days; and in a 10 per cent formalin solution for hours.

From these facts it will be observed that the spores of American foulbrood are able to live over long periods in nature and that the beekeeper cannot wait until they die a natural death, if he wishes to make sure that they are dead, but must take active measures to destroy them. For practical purposes chemical disinfectants are not suitable. Heat would seem to be the most practical agent. Burning or scorching, of course, will kill the spores and the boiling of water or honey containing them will cause their destruction. In practical apiculture a somewhat longer period should be adopted, in using chemical disinfectants to kill the spores, or in boiling to destroy them, than is indicated as being necessary in the experiments which have been cited here.

### Experimental Studies on American Foulbrood

It is quite natural that a large number of questions concerning the bee diseases should arrive in the minds of beekeepers whose apiaries are infected or threatened with infection. Many of these questions can be answered by the results of studies which have been made on these diseases in the experimental apiary. During these studies not only have the causes of the bee diseases been discovered, but observations of interest have been noted, regarding the symptoms, the diagnosis and the spread of the diseases, and the effect of them on the colony and on the apiary. During the work no experiments were undertaken directly on the treatment of the diseases, but in selecting problems for solution such were chosen as would yield information which could be used by the beekeeper in devising new methods of treatment or in improving those now in use.

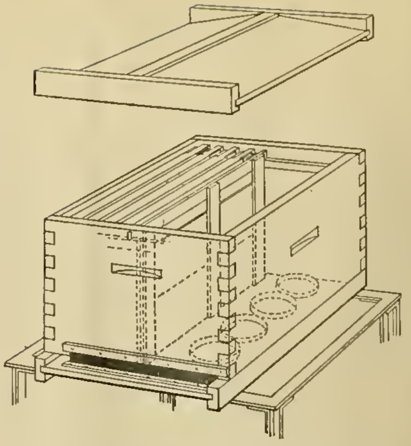

Fig. 7.—Hive for experimental colony.

A knowledge of the methods which were devised and used, in carrying on the bee disease study, is valuable not only to the investigator who wishes to pursue such studies, but also to the practical beekeeper who, by becoming familiar with the experimental procedure and the observations noted, will be able to draw conclusions for himself and to verify or disprove those drawn by others.

The American foulbrood studies were conducted in the same apiary (Fig. 6) as were those on the other diseases, and the methods used are quite similar to those briefly discussed for Nosema-disease and European foulbrood[†] in earlier articles. From 3 to 5 scales were used, as a rule, in making inoculations. A suspension is made of these by grinding them in a spoonful of water and then adding this aqueous suspension to syrup. The syrup suspension, which now contains millions of American foulbrood spores, is then fed to a colony free from disease. The same kind of experimental hive (Fig. 7) is used as was employed in the studies of the other diseases. The method of inoculation, by which some of the contaminated food is placed directly in the cell with the larvæ, is less satisfactory in studies on American foulbrood than on the other brood diseases.

The first symptom of American foulbrood to be observed, after feeding a colony the germs, occurs during the seventh day following the hour in which the feeding is done. Since the larvæ and pupæ dead of American foulbrood contain millions of spores, any fragment of the dead brood is capable of producing the disease if it reaches feeding larvæ and is eaten by them. The piecemeal removal of the brood (Fig. 5, L) and the slight gnawing of it by the bees tend, therefore, to spread the disease within the colony.

In a few instances only, during the experimental studies, did the disease seem to spread from the inoculated to the healthy colonies of the apiary.

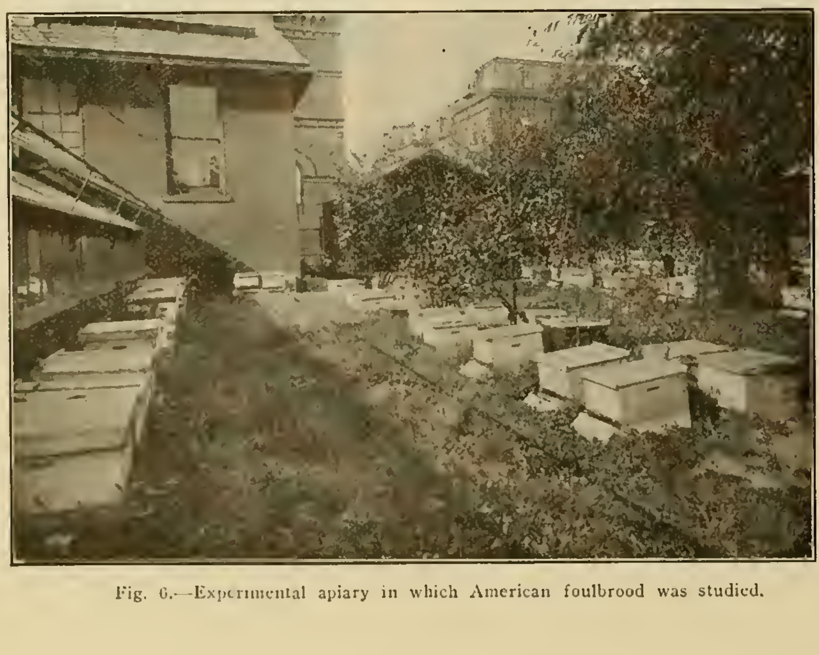

Fig. 6.—Experimental apiary in which American foulbrood was studied.

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[*] American Bee Journal, July, August and September, 1919.

[†] American Bee Journal, July and August, 1920.

The few colonies which probably became infected in this way stood next to heavily diseased ones. The infection possibly, in these few cases, resulted from a heavy drifting of bees or slow robbing. So far, however, experimental evidence is insufficient to demonstrate to what extent the disease is spread by drifting bees or as a result of different degrees of robbing.

Excepting the few cases just mentioned, the healthy colonies of the experimental apiary suffered no infection, apparently, from the diseased ones present. From this fact, it may be concluded that the disease is not likely to be spread from flowers which have been visited by bees from diseased colonies and afterwards by others from healthy ones. The same fact leads to the conclusion that the water supply of the bees of the experimental apiary was not a fruitful source of infection. It should be mentioned, however, that no stagnant or slow moving body of water was near by. A definite statement regarding the extent, if any, to which the water supply of an infected apiary helps to spread the disease, is not justified from the experimental evidence thus far obtained.

Since American foulbrood can be readily produced experimentally, in a colony, by feeding it syrup or honey to which the spores of the germ have been added, naturally the robbing by bees of honey which contains such spores would likely cause disease in the colonies to which such bees belong.

When brood frames from American foulbrood colonies are placed in healthy colonies they serve to transmit the disease. Should this be done by the practical apiarist during the manipulations in the apiary, naturally a spread of the disease in this way would likely occur.

The fact that there was practically no spread of the disease, from colony to colony, in the experimental apiary, shows that the hands, the hive tool, the smoker and the clothing are not likely means for spreading the disease.*

In these studies the hives in which the disease had been produced by inoculation were flamed inside before being used again. One reason especially for doing this, in case of American foulbrood, is that the bottom board becomes contaminated with the spores of the disease at the time of the inoculation. In no case was the disease transmitted by the flamed hives.

It is not unlikely that the beekeeper will find it to be a safe procedure to omit in well selected cases the flaming or disinfection by other means. Such cases would be those especially in which only a small amount of the disease was present in the colony housed by the hive.

In a considerable number of instances queens from diseased colonies were introduced into healthy ones. No disease resulted in any of these cases. The observations in this connection were not continued, however, over a sufficiently long period to determine to what extent the disease is likely to be transmitted by queens. The danger in this respect is probably less than many at times have supposed.

Frequently the American foulbrood colonies were used for experiments on other diseases. If they were heavily diseased, but sufficiently strong, the combs were removed and burned and the colony was given either combs from healthy colonies or frames with strips or full sheets of foundation. Usually within 2 or 3 weeks the colonies were again in suitable condition for experimental purposes. If the colonies were heavily diseased and weak, the bees were confined, chloroformed and burned, together with the brood combs* and frames.

When a colony becomes diseased as a result of inoculation it never dies immediately. The length of time it lives depends upon a number of factors—the amount of disease present, the time of year and the strength of the colony being among the important ones. It was found that if a colony becomes diseased at any time of the year it invariably dies sooner or later. If strong and heavily infected early in the season it will die before or during winter, but if infected later it will probably winter, but will die the following bee season. If only a cell here and there, in the brood nest, contains diseased brood, death of the colony may be very much delayed, and in a small percentage of such cases recovery possibly takes place. For practical purposes, therefore, American foulbrood colonies should be considered as colonies which, if they are untreated, will die sooner or later of the disease, the exceptions to this rule being few if, indeed, they occur at all.

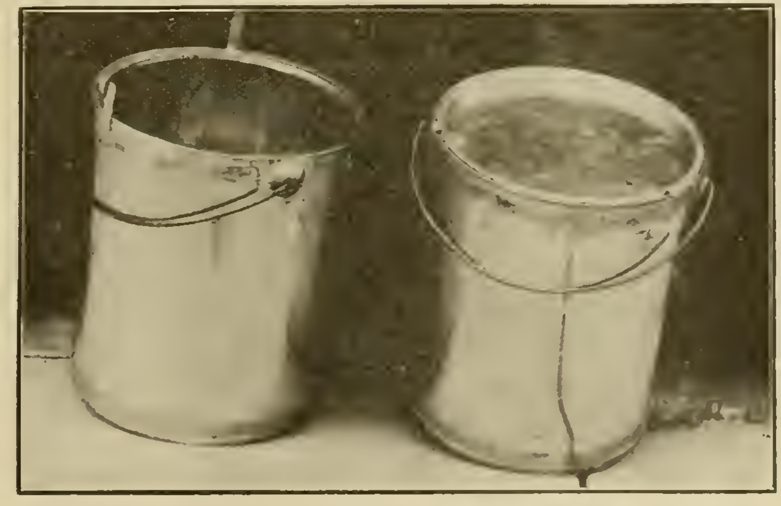
## SOLDERING HONEY PAILS FOR PARCELS POST OR EXPRESS

By Ivan Whiting

During the last few months there has been some discussion about soldering honey pails and the spread of foulbrood because of unwashed containers. It seems very reasonable to believe that few containers would be discarded if they were useful after the honey was removed. A honey pail soldered between the pail and cover becomes a useless container. As advocated, a label requesting that the container be washed before being thrown away would be helpful and should be required on all honey from foulbrood yards.

In disposing of my 1918 honey crop I sent a few 10-pound pails by parcels post about 150 miles. Some pails had no protection, some were covered top and bottom with lath strips between, and some were boxed, but none were soldered. Over half the honey was lost. Some disappeared "without a trace," some spilled in the mail sacks, same on depot platforms, etc. In 1919 I sent about 30 pails the same distance, except one pail sent to Kennewick, Wash., by express, all soldered by my method, and no honey was lost. I discovered it was absolutely necessary to solder the covers on.

The accompanying photograph shows how my pails are fixed. Three straps of light (IC) tin ¼x1½ in. are soldered on the pail, as shown at the left. Then the pail is filled, the straps bent over the edge tight, fitted into the cover, and soldered to the cover. To remove the strap, cut it in two with can opener or pointed tool, grab each piece with a pair of pliers and pull it off. Nothing is left on the pail except a little solder, which will not interfere with the future usefulness of the pail. It certainly takes



Whiting's method of sealing honey pails for shipment by parcels post.

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* While conducting the experiments no disinfectants were used on the hands, hive, tool, or smoker, and the clothing was not changed in going from diseased to healthy colonies. Reasonable care, of course, should always be taken while working with diseased colonies. It would not be well, for example, to test the ropiness of the dead brood with the hive tool and then the brood of a healthy colony without first removing the disease material from the tool. The cleaning of it can be easily and probably safely accomplished by thrusting it a time or two into the soil—a method which beekeepers sometimes employ.

* The wax was not saved during these experimental studies, as it was not economical to do so. No experiments were conducted directly on the question of the transmission of the disease by way of wax from diseased colonies used as foundation. The facts at hand tend to indicate that the disease is probably not spread in this way.

much longer to solder straps on pails than it does to solder the cover 3 or 4 places in the rim, but I believe it is worth while. The average beekeeper who ships his honey in pails could solder all his pails for shipment in a short time, after he learns how.

My soldering outfit consists of the following: A small trough for holding the pails, two soldering irons, bar of solder, kerosene stove (kitchen stove), a pint earthen jar containing a weak solution of sal ammoniac, bottle of 'Ruby flux" and a mucilage brush, pair of tin shears, piece of light tin, pointed tool and pair of pliers.

Soldering on bright tin is very easy and can be best learned by being shown, but the following directions can be used. Place the irons in the blaze of a kerosene, gas or gasoline stove. Make a weak solution of sal ammoniac in the pint jar. Cut straps ¼x1½ in. of light, bright tin, straighten them and apply flux to one end. Place the pail in the trough and put flux (or powdered alum) on the spot where the strap is to be soldered. Remove an iron from the blaze, test its heat by plunging the point in the sal ammoniac solution. The sound of an iron properly heated will soon become familiar. The solution cleans the iron for use. Irons can also be cleaned by being rubbed across a cloth. Now place the strap on the pail, the soldering iron on the strap, and touch the bar of solder to the tinned (or bright) part of the iron until enough solder has melted to solder the strap. Hold the iron on the pail until the solder runs (or "sweats") under the strap. As you remove the iron hold the strap in place for a moment with the fingers, or pliers, if it is hot. Soldering the straps inside the cover is identically the same process, except that some pointed tool is necessary to hold the strap in place until the solder hardens.

The advantage of having two irons is that one will always be hot for continuous work. Care must be taken not to overheat the irons, burning off the tinning. An iron not bright will not solder. It is then necessary to retin the iron, a difficult process with only a kerosene or gasoline stove, since the iron must be heated cherry red. Short irons can often be bought cheap from a tinsmith, and are just as serviceable as heavier ones after they are re-pointed and re-tinned, except that they will not hold the heat as long.

Although this article is not written in behalf of soldering, it is well to know how to solder and have an outfit just for use about the house. Much time, convenience and expense can be saved by doing one's own soldering.

Plymouth, Wis.

## BEEKEEPING IN CANADA

In this issue we publish some pictures showing the apiary building at the Canadian Government Farms at Ottawa, and also those in charge of the work.

In Canada a Province corresponds to a State in this country. In the picture we show Prof. F. Eric Millen, who has charge of the beekeeping work for the Province of Ontario, together with Mr. F. W. L. Sladen, the Dominion Apiarist, who has charge of the work for the Government of Canada, with headquarters at Ottawa, and his assistant, Mr. C. B. Gooderham. The position occupied by Mr. Sladen and his assistant corresponds to that of the men in charge of beekeeping work in the United States Department of Agriculture in this country.

At Ottawa the work undertaken is largely experimental in nature, together with investigation of the honey plants, their range, season of blooming, etc. The Dominion Apiarist also has supervision of the bees at the various branch farms, in different parts of the Dominion.

## BROOD, HEAT AND HONEY

By Will H. Gray

The experiments carried on last spring at North Lonsdale with electrically heated hives, while not extensive enough to be conclusive, were very interesting, because they showed very clearly the intimate relationship between brood, heat and honey.

Left to right, Prof. F. Eric Millen, Provincial Apiarist of Ontario; C. B. Gooderham, Assistant to the Dominion Apiarist, and F. W. L. Sladen, Dominion Apiarist of Canada.

The heating arrangement, consisting of a 6 candle power carbon filament lamp, was started on the 9th of February in each of three hives, and kept going till the middle of April. There was some brood in one at the beginning. A few hours after the heat was applied there were great signs of activity, and a continual scratching could be heard inside. Two colonies were given feeders, which they emptied in four or five days. Later a feeder was found to have been emptied in one night. On examination it was found that the lamp had burned out, hence the rapid consumption of syrup to keep up the heat.

The colony that was without a feeder liquified a large amount of honey and put it near the brood. They had not left the hive during this time. (If they had it would probably have been considered willow honey).

The most interesting part of the experiment was the saving of honey instead of the consumption of it, as would have been expected. This looks as if heat, brood and honey are interchangeable, which puts quite a pleasant aspect on this method, as the honey saved would probably pay for the heat supplied and the hive would be benefitted by the extra amount of brood raised.

All three hives were very weak, one had a poor queen and showed no benefit at all. One of the other two was divided at the end of May, as it then occupied two stories; they swarmed again about the middle of June. The remaining one became very strong.

The large increase in brood-rearing did not begin until the bees were able to fly. The heated colonies made use of many flying hours, while the unheated did not venture out.

British Columbia.

## YELLOW INDIGO

The following letter from a New York beekeeper refers to the Yellow Indigo, **Baptistia tinctoria.** It grows on dry and sandy soils from New England and Ontario to Minnesota, and south to Florida and Louisiana. It is known by a number of local names, including wild indigo, indigoweed, clover broom, shoofly, rattlebush, horsefly-weed, and Mr. Barteau adds bugle-weed, though bugle-weed is commonly applied to an entirely different plant.

Brookhaven, L. I., Aug. 20, 1920.

"I am enclosing you a branch of a weed known in this locality as 'bugle-weed.' I have never known it to be spoken of as a nectar-bearing plant. It grows on waste, sandy land, and most luxuriantly in burned over areas (woods). The plant grows about 2 feet high and has tremendous roots, going down three or four feet. It yields in all kinds of weather immediately after rain. Hot, dry days, with no dews at night, make no difference to it. The honey is water white, as mild, or milder, than clover. At this season of the year there is usually a dearth, with nothing coming in whatever. A burnt over woodland has caused this weed to bloom this season in the greatest profusion.

My scale hive record since July 20 is as follows:

| | Gain. | Loss. |
|---|---|---|
| July 20 | 11½ | |
| July 21 | 13½ | |
| July 22 | 8½ | |
| July 23 | | 4½ |
| July 24 | | 1½ |
| July 25 | 10 | |
| July 26 | 9 | |
| July 27 | 15½ | |
| July 28 | 17 | |
| July 29 | 8½ | |
| July 30 | 3 | |
| July 31 | 14 | |
| August 1 | 3 | |
| August 2 | 9 | |
| August 3 | 13 | |
| August 4 | 10 | |
| August 5 | 18 | |
| | 163½ | 6 |

Net gain in 17 days, 157½ pounds.

If this weed has not been mentioned it seems worthy of a prominent place."

E. M. BARTEAU.

### HONEY PRODUCERS' LEAGUE

The American Honey Producers' League is the most important movement in the way of organization of the beekeepers ever yet instituted. It is the product of the best brains of our American honey producers. That it cannot function without the moral and financial support of the beekeepers is self evident. Any state or regional association which fails to provide for membership and to send a delegation to the next annual meeting in January will be making a mistake. If funds of your association are not available, by all means raise the amount of subscription. Do not get the notion that the League is a sectional affair. It is national or international in its scope. Its policy under the constitution, will be determined by the delegate membership, and be sure **your** Association is represented. A permanent Secretary has not yet been selected. The President, Mr. E. G. LeStourgeon, San Antonio, Tex., will be able to furnish copies of the constitution and other literature. Write for them.

E. S. MILLER.

Valparaiso, Ind., Sept. 6, 1920.

### A NEW HONEY PLANT

Jes Dalton, of Louisiana, sends us a specimen which has furnished a good honey flow the past season. It is Lizard's tail **(Saururus cernuus)**, called in some places swamp lily, or breastweed. It grows in swamps or on muddy banks, and is found from New England and Ontario to Minnesota south to Louisiana and Texas. There are many plants common to the swamps which are the sources of honey, which the beekeepers have not yet learned to recognize, and we are glad to receive specimens of this kind. This plant is a marsh herb, growing from one to four or five feet high, with slender rootstocks, jointed stem and ovate or heartshaped leaves. The small white flowers are crowded together on long, dense spikes. Mr. Dalton writes that this year it began blooming before the close of the spring flow and carried the bees over the season when they usually have a dearth until the summer flow came in July. By overlapping both the usual spring and summer flows it gave a continuous season from the time spring opened till the close of the summer flow. He states that although there are hundreds of acres of it near by, he has not known it to yield before, and he wonders whether it will come again. He says that it yields very freely a fine-flavored, yellow honey of unusual color, and that it would be of inestimable value if it could be depended upon to yield every season.

We will be glad to hear from any of our readers who have been in the vicinity of swamp lands as to whether they have had flows from this plant, and if so, whether it yields frequently.

### ANOTHER REMEDY FOR STINGS

I have tried about all the remedies for stings, but the juice of an onion is the best of all. If the juice is squeezed directly on the wound immediately and kept up for a little time, there will be no swelling. When stung in the mouth an onion chewed up and held in the mouth is an effective remedy.

We cut a bee tree a few years ago in August. There were six combs 10 inches wide and 5 feet long, with every inch filled with sealed brood, but not a quarter of a pound of honey.

ANDREW MILES.

Indiana.

### ROCHESTER ATTEMPTS TO OUTLAW BEES

Some time since, Alderman Morgan, of the Nineteenth Ward of the city of Rochester, N. Y., introduced an ordinance prohibiting the keeping of bees within the city limits without the consent of all persons living within 200 feet of where the bees are kept.

The Monroe County Beekeepers' Association, through its officers, at once protested. J. S. Bryan, Vice President of the organization, has employed an attorney to represent the beekeepers in opposing the passage of the ordinance. Rochester is one of the cities where the National, in the days of its usefulness, fought a legal battle to secure the discharge of a beekeeper arrested for keeping bees in violation of a city ordinance. At that time the court ruled the ordinance unconstitutional and the defendant was acquitted. It is interesting to note that this same city proposes to try the same experiment again, after many years of time, in spite of numerous court decisions to the effect that an ordinance declaring bees to be a nuisance, whether they be so in fact or not, is null and void.

The matter will come up for hearing in due time, though we anticipate that the ordinance will not be passed. The following remonstrance has been filed with the law committee of the common council by Attorney Bryan, in co-operation with President Gordon Dye and Secretary Frank Pillsbury of the association:

Rochester, N. Y., July 30, 1920.

Law Committee, Common Council of the City of Rochester, Rochester, N. Y.:

Gentlemen: In behalf of the Monroe County Beekeepers' Society, I herewith present and file the following objections to the passage of the ordinance introduced by Alderman Morgan relating to the keeping of bees within the City of Rochester:

1. Bees are not a nuisance.
2. The question of nuisance is one to be judicially determined in each case.
3. The proposed ordinance attempts to declare the keeping of bees a nuisance without regard as to whether or not bees in general have become a nuisance within the city.
4. There is no proof of the necessity of such an exercise of police power as contemplated.
5. That the passage of the proposed ordinance would be an unlawful interference with the rights to pursue a lawful business.
6. That the passage of the proposed

Apicultural building at the Canadian Government Farms at Ottawa.

First convention of the Georgia State Beekeepers' Association, recently organized at Waycross.

ordinance is legislation directed against the owner of bees and not against the bees themselves and would not in any way control or eliminate the alleged danger and that transient bees, vagrant swarms of bees, wild bees, sweat bees and hornets, which are uncontrollable, would be and are more dangerous than the domesticated bee which has received care and attention from beekeepers.

7. That bees in themselves are not dangerous, and will not sting or annoy until attacked.

8. It has been judicially determined that the keeping of bees in the City of Rochester is not a nuisance.—City of Rochester vs. Taunton. Decision of the Police Court held that the enactment of a similar ordinance within the City of Rochester, which was introduced by former Alderman William Baker, of the Tenth Ward, was illegal and unconstitutional.

To show you how rarely dangerous bees are, I desire to call your attention to the fact that there are two hives of bees immediately back of the store on Spring Street, occupied by Alderman Morgan, the introducer of this ordinance, and yet I am quite sure that he or no one else knows about them being there except the owner.

Passing from the legal phase of this question, I desire to call your attention to the fact that there are about two hundred beekeepers in the City of Rochester, representing about five thousand colonies of bees, and they produce, as near as we can determine, about one hundred thousand pounds of honey, valued at about 27 cents per pound. Honey is the only food produced which is completely prepared without the assistance of man, animal or other insect, and nothing touches it in the process of securing it and preparing it for human food except the bee.

To destroy this immense amount of food secured by these little insects in the City of Rochester because one or two persons were stung by bees through their own acts, would be almost uncalled for, and it seems to me a willful waste of food, which would add to our already great burden of the high cost of living. It is the elimination of one food product which causes the increased demand for another and the elimination of one hundred thousand pounds of honey from the City of Rochester would certainly mean an increased demand upon sugar and a consequent raise in the price of that commodity.

Besides the loss in food, there would be even a greater loss in the pollenization of fruits, flowers and vegetables, and little or no fruit, flowers or vegetables could be grown without pollenization, the greatest method of which is the bee itself. Not a hothouse used for growing cucumbers could succeed without bees unless by the long and laborious process of touching each little blossom with a hair brush and thus pollinating them. I suggest that you verify this by asking Mr. Rudman, of Irondequoit, or Mr. William Craig, of the penitentiary, about the value of bees in growing fruits and vegetables.

I therefore, in behalf of the beekeepers of Rochester as represented in the Monroe County Beekeepers' Society, ask that said ordinance be disapproved of and its passage denied.

All of which is respectfully submitted.

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## THE IMPORTANCE OF WINTER STORES

By J. H. Merrill, Apiarist*
Kansas State Agricultural College.

*Contribution No. 58 from the Entomological Laboratory, Kansas State Agricultural College.

I received a letter from J. E. Crane in May, in which he made some observations on winter protection. In his letter he makes the two following statements: "With good winter packing I have had, for nearly 50 years, satisfactory results, except when my bees have had poor stores from honeydew or other sources, when even winter packing will not save all of them." He further said that "With early, well-ripened honey, and plenty of bees, a colony will stand almost any kind of cold for a time, but it pays, and pays well, to use winter packing where it can be had."

As reported on page 334 of the American Bee Journal for October, 1919, and also in the Journal of Economic Entomology, pages 99 to 111, Vol. 13, No. 1, an experiment to determine the best form for winter protection for bees is being carried on at the Experiment Station of the Kansas State Agricultural College. In the articles above mentioned, the value of a windbreak, the superiority of a two-story over a one-story hive for wintering, and the value of packing are clearly shown. During the winter of 1919-1920 this experiment was continued, and when, on the 19th of May, the bees were weighed to determine which form of wintering had been best for them, some additional factors were found to have entered into the experiment that were not present in the first two years work. These bees were put into winter quarters on Octber 4, 1919, with a known amount of honey and a known number of bees in each hive. Sufficient stores were left in each colony to carry them through any ordinary winter, and up to the beginning of the honey flow. On the 5th of April the temperature at Manhattan dropped to 5 above zero. This low temperature was accompanied by a heavy snow storm. As a consequence of this unseasonable weather, the flowers on which the bees would ordinarily depend for spring food, were killed; consequently, they were forced to exist on the stores which were left in the hives in the fall. One colony, between October 4 and May 19, consumed 52⅜ pounds of honey, after which it was fed two half-filled frames of honey and 6 pounds of sugar. This will explain why some of the colonies became short on stores before they were weighed in the spring.

During the winter, daily weights were taken and recorded. On the 19th of May, 1920, the number of bees, the amount of brood, and the amount of honey were again determined. This date is two weeks later than the one on which the bees were weighed in 1918-1919, and each colony should have shown several thousand more bees this year on the 19th of May than it did last year on the 4th of May. In 1918-1919, the one-story unpacked hive in the windbreak gained 313 bees, while the packed hive in the windbreak gained 24,844, but during 1919-1920, the one-story unpacked hive in the windbreak gained 10,000, while the packed hive, similarly placed, gained only 3,700. In 1918-1920, the two-story hive in the windbreak gained 5,936, whereas in 1920 it gained 8,125. These results would seem to overthrow any evidence that we may have had in the past as to the value of winter protection, especially when we consider the fact that the packed hive in 1918-1919 had 24,331 more bees than the unpacked hive, while in 1919-1920 it had 6,300 less. This would seem to indicate that the packing had not been of any great value to it, especially when the unpacked one-story hive had five frames of brood, while the packed hive had only three frames. Had it not been for the fact that daily records of the changes of weights were kept, these results would have been very disconcerting, and extremely hard to account for, but upon turning to the daily record we found that on April 20 the packed hive reached its lowest weight. From then until the 19th of May the gains and losses ranged from nothing up to an eighth of a pound, showing that on April 20 the winter stores were exhausted in that colony, and from that time forward they were barely able to secure enough nectar from the field to even maintain the existence of the colony. On the 19th of May, when the colony was weighed, no honey at all was found in the packed hive, while in the one-story unpacked hive there remained 3½ pounds of unconsumed stores. The unpacked hive had five frames of brood, whereas the packed hive had only about three. To all ordinary appearances, the packed hive was a good, strong colony of bees on the 19th of May, and anyone would have been justified in thinking that it had wintered well. However, when the fact is taken into consideration that during the previous year this colony gained 24,844 bees between the fall and spring, and this year only gained 3,700, we can see that something was radically wrong. As the one-story unpacked hive contained 5 frames of brood, while the packed hive only had three frames, we can understand why this weakened condition was brought about. On the 19th of April, when the stores were exhausted, the queen in the packed hive did not lay as many eggs as the one in the unpacked hive. To all appearances this colony had wintered well, yet when we consider that the date of weighing was two weeks later than the previous year, and that during these two weeks the queen should have deposited from 30,000 to 40,000 eggs, which would have filled six to eight frames of brood, when as a matter of fact it only had three frames, it showed plainly that the queen was seriously affected by the shortage of stores. Had we not the daily records of the changes in weights in these colonies, we would never have known why this colony did so poorly. Although in this article I have spoken of one colony, the same fact holds true for the rest of the colonies which became low in stores.

When the one-story unpacked hive in the windbreak is compared with the one-story unpacked hive in the open, the odds in the number of bees gained, and in the amount of brood are largely in favor of the one protected by a windbreak. Both of these hives had unconsumed stores when the spring weighing was made, but the hive in the windbreak had consumed 9 pounds more than the one in the open, which it had used in brood-rearing. The one in the windbreak had five frames of brood and gained 10,000 bees, while the one in the open only had 3 2-3 frames of brood and gained 575. The fact that the packed hive in the open gained more than the unpacked hive in the open, both in number of bees and the amount of brood, demonstrated that, with other things being equal, packing was of a distinct advantage. Here again was shown the value of a windbreak over no windbreak, and, as in the open, the two-story unpacked hive gained 8,000 more bees than the one-story unpacked hive, the superiority of the large hive over the small one for wintering was shown. The superiority of the packed hive over the unpacked hive in the open again showed the value of winter protection.

Some valuable deductions can be made from these results, some of which are: When a colony has insufficient stores, even though it may apparently winter well, yet the queen will so far slow down in her work as to seriously weaken the colony far below the strength that it would have been had it been supplied with sufficient stores. Mr. Crane's statement that if bees are supplied with plenty of honey "they can stand almost any cold for a time," and also his contention that without stores winter packing will not save them, are both strikingly borne out by the above figures. When considering the question of wintering bees, too much emphasis should not be placed on any one feature of wintering. We know that we must have a large number of young bees; that we must have plenty of stores, and also that if we can give our bees the added value of a windbreak and winter protection, it will well repay us, but no beekeeper should rely on any one of these factors alone and expect to get the very best results. They are all necessary.

## SWEET CLOVER

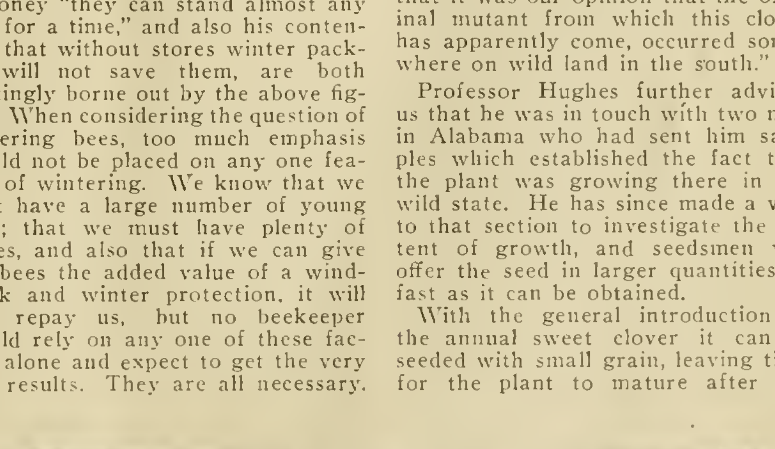
The world has suddenly found that sweet clover is a valuable forage plant. Beekeepers have tried for a generation to overcome the great prejudice against it. Farmers fought it as a weed and lawmakers legislated against it until it seemed the task of educating the public to its true value was well nigh hopeless. The past few years have seen a wonderful change in sentiment and recent months have developed such a demand for seed as the most optimistic had hardly dared hope for.

Now that sweet clover has demonstrated its value, both as a soil builder and a forage plant, large areas of new honey-producing territory will rapidly open up. Great interest is manifested in better strains and we may shortly look for a blooming period from May until frost. The announcement that Professor Hughes had found an annual variety led to such a demand for seed that it was only possible to send it out in small packages of a few ounces, when the planters wanted bushels, yet thousands were disappointed and failed to get any seed. A letter from Professor Hughes states as follows:

"You will be interested in knowing that we sent out something over 45,000 small samples of seed of the annual sweet clover this spring, and that we had hundreds and thousands of requests for larger quantities at almost any price which we might ask. We, of course, had no seed for sale. When we made announcement regarding this clover we stated that it did not originate here. We stated that it was our opinion that the original mutant from which this clover has apparently come, occurred somewhere on wild land in the south."

Professor Hughes further advised us that he was in touch with two men in Alabama who had sent him samples which established the fact that the plant was growing there in the wild state. He has since made a visit to that section to investigate the extent of growth, and seedsmen will offer the seed in larger quantities as fast as it can be obtained.

With the general introduction of the annual sweet clover it can be seeded with small grain, leaving time for the plant to mature after the



Apple orchard and apiary of Tsunekichi Ishii, of Japan.

small grain has been removed. This will not only add greatly to the production of the grains through soil improvement, but it will increase the area of bee pasturage by untold thousands of acres.

### Another Variety

The thing of latest interest is an early blooming variety of the biennial sweet clover. Last May, as Henry Dadant was making a journey to the outapiaries he was surprised to see a few plants of sweet clover in full bloom. Since it seldom reaches its period of bloom so early, he began investigating to see whether there was a strain which might be used to fill in the gap following fruit bloom, when the bees have no nectar available. From County Agent J. H. Lloyd, of Hancock County, he secured the following information:

"Mr. Foot has called my attention to a paragraph in the circular letter from Grundy County as follows:

'A new type of two-year white blossom sweet clover has been grown in Grundy County for the past few years. The direct origin of this is not known; however, it is very evident that this sweet clover is distinct and different from the large, coarse and later maturing white blossom sweet clover. The Grundy County sweet clover is nearly three weeks earlier in maturing, is shorter, growing about waist high on the average; is a heavy seed producer and ripens more uniformly. It has several advantages over the large sweet clover, although for soiling purposes it is hardly as good. Fields of this variety of sweet clover may be seen on the farms of Clifford Collins, northeast of Morris; Maurice Walsh, northeast of Mason, and Robert McLuckie and James Huml, southwest of Coal City. The Grundy County sweet clover will soon be ready to harvest for seed. (July 13). This type and the large growing kind may both be seen on the farm of Alex Bell, three miles southeast of Morris. "

With an annual variety which blooms the same season the seed is planted, and early and late blooming varieties of the biennial variety, the beekeepers may hope for greatly increased honey flows in the sweet clover districts. A mixture of the seeds of all these varieties, sown on waste land will give bloom every year, and for a long period. Where farmers sow for permanent pasture, as some are beginning to do, a mixture will insure better results for the farmer as well as the beekeeper. The great interest in the plant on the part of the farmers of the country offers unlimited possibilities for beekeeping over a very large area.

The American Bee Journal hopes to be able to secure some seed of the early blooming variety for trial next season.

## ANNUAL SWEET CLOVER

### A Testimonial

Last fall I secured from the Henry Field Seed Co. two ounces of the Annual White Sweet Clover. I shipped the seed to my father in Italy, asking him to pay it the best of his attention and care. Confident that you would be glad to hear the result, I herewith transcribe the following from his letter, just received:

"The annual melilot sowed by me on the 15th of April is all in bloom, notwithstanding the drought, which has never been equaled here. The bees come to it extraordinarily, and at all hours of the day. It has reached the height of 1.50 meters (557 inches), July 9, and none of our peasants has the least idea of this plant with its millions of flowers. I will take care of gathering its seed."

Don't you think that such results have been very satisfactory and encouraging, in spite of the unfavorable conditions? D. BARONE.

New York City, Sept. I.

## BEES KILLED BY SMELTER SMOKE

Camp Verde, Ariz., Aug. 15, 1920.

Will you please make a correction of the article by Kennith Hawkins on page 275, August issue of the American Bee Journal, entitled, "Bees Killed by Smelters?"

The "complete investigation" made by the State Entomologist and Plant Pathologist, under instructions from Governor Campbell, was a hurried visit to some eight or ten apiaries, scattered over an area of 30 miles in length, all made inside of two days. Somewhere near 1,000 colonies of bees are involved, owned by four different parties. Any investigation of any value, over that of the practical beemen who are being injured, would have to extend over at least several months and be conducted by men familiar with the practical side of the business. The smelter people are spending what has been estimated by those outside as at least $40 per day for several months, in an attempt to prove that their smelters do not injure crops or bees.

Mr. and Mrs. George W. Burdette, in their apiary at West Union, West Virginia.

The charge "that sulphur is deposited in the bloom of honey plants which are visited by bees and that this causes the honey to taste like a good variety of parlor matches," is evidently a part of that "excellent write-up of the case" in the last Los Angeles Times, and is a fair sample of the journalism for which the American people are paying such a price, and getting so much rot.

The facts in the case are that, if our honey has any sulphur in it it would take a chemical analysis to show it. The quality, to all appearances, is as good as it ever was. Our only complaint is that, from some cause not yet fully determined, our adult bees disappear just when they would be useful in gathering a crop. This is not a new condition, by any means, but has occurred in other localities where smelter smoke has driven, in one instance, as many as 10,000 colonies of bees out of business. A case is to come up in the Federal Court of this District, in September, instituted by one of the beemen of this section, which will be one of the most interesting cases of its kind that has ever come into court. Three different State Bee Inspectors have, in the past four years, given us a clean bill of health for our bees, as far as any disease is concerned. Unless the smelters put on some method of removing the poisonous matter from their smoke we will be compelled to give up one of the best bee ranges in the State and move; but where, is the question? L. B. BELT.

Arizona.

## LATIN NAMES OF PLANTS

By E. G. Baldwin

In the July issue of the good old American Bee Journal, page 229, appears an editorial on the terminology of English scientific names, apropos of the Latin name for white sweet clover. Attention is there called to the fact that the Italians call the plant "Melilotus albus," while the English-speaking races say "Melilotus alba." "Ye editors," in the editorial mentioned, commend, in passing, the ending "us" of the Italian usage as being the correct form, and add as their reason for so doing: the termination "us," of melilotus, is masculine, the termination "a," of alba, is feminine, etc. While our own Latin days are not so far past, may we suggest that the statement regarding adjectives is quite correct; "us" in an adjective, is always and only masculine, "a" always and only feminine; but nouns, on the contrary, are not always governed in their gender by their terminal syllables. Certain rules govern gender of nouns, by meaning, not by endings. For example, names of males are always masculine, names of females always feminine, even if the male noun ended in "a" or the feminine in "us," and so, a noun ending in "us" might be masculine, feminine or neuter by meaning. Now names of germs, trees and plants were regularly feminine by meaning. For example, Eucalyptus (the eucalypt tree) is regularly feminine, and our English nomenclature has "Eucalyptus robusta" for one of the species, and so the word "Planus" (Plane tree) regularly the adjective of its species ending in "a." Thus is the customary usage in English botanical terms, though there are some variations that seem inconsistent, to be sure, as the editors maintain.

But for the reasons given, "Melilotus alba" is undoubtedly better Latin than "Melilotus albus."

## UDO TOEPPERWEIN

By E. G. LeStourgeon

Very suddenly, on the morning of Saturday, August 7, Mr. Udo Toepperwein passed away. A slight scratch from a mesquite thorn which he had received a short time before, became infected and blood poison developed.

Older beekeepers will remember a time, not far distant, when the name of Udo Toepperwein was the leading name in Texas beekeeping. His establishment was the sole source of supply. He developed the markets for honey, which we still enjoy. His labor and energy earned for him every office in the gift of the Texas State Beekeepers' Association, and he served his State on the directorate of the National Association, attending many of its meetings as a delegate. It was chiefly through his efforts that the 1907 convention was held in San Antonio.

Udo Toepperwein was a loyal friend, an enthusiastic beekeeper and a good neighbor. His loss will be keenly felt, as he was still a young man, being but 42 years old at the time of his death.

## SUMMER MEETING OF TEXAS HONEY PRODUCERS' ASSOCIATION

### Educational Section

During the Texas Farmers' Congress, held at the A. & M. College, August 9, 10 and 11, the beekeepers of the State met in their 28th annual meeting. This session was marked by features that made it one of the greatest that has ever been held. The beekeepers' section of the Farmers' Congress had more enrollments than all the other sections put together. In fact, the Farmers' Congress was a beekeepers' meeting. On account of the growing interest in the bee business and because of the requirements of the newly formed Honey Producers' League for representation in that body, it was thought best by the beekeepers to return to the old name of the association. So, by vote of the society, this body is now officially designated as the Texas Beekeepers' Association. This gives the State a legal representative in the new league.

Among the papers presented and worthy of notice was the report of Willis C. Collier relative to the meeting of the American Honey Producers' League. Mr. Collier was a representative appointed by this Association, and his report was adopted and commended by a unanimous vote.

The reports of E. G. Le Stourgeon, President, and Miss Alma Hasselbauer show such material progress of the Texas Honey Producers' Association that it strengthened the report of Mr. Collier as to what the nation-wide associations of similar kind could accomplish. The successful growth from 15,000 to 65,000 in four years was sufficient to convince anyone of the achievements of the Association.

Mr. W. O. Victor, of Uvalde, the veteran bee king of Texas, gave an account of his experiments in moving bees from Texas to the North in refrigerator cars, in summing up over 30 years' experience in shipping bees a long distance.

Dr. M. C. Tanquary gave a report of the progress of the apiary inspection work, showing the change of policy of the Department. This change has already been partially effected. Under the new order, all inspection work is done directly by men sent out from College Station, inspection being carried on only where disease is suspected. The inspectors are empowered to use their time in the treating of all disease found, and have ample authority to carry out the full measure of the law.

The paper on the combless package bee business by E. B. Ault, of Calallen, was read by the Secretary. Mr. Ault is one of the pioneers in shipping combless packages.

The paper of Mr. E. G. Le Stourgeon, who was sent as a representative of the Texas Honey Producers' Association to the American Honey Producers' League, and who returned having been elected its first President, was considered by all as the finest paper given during the meeting. Mr. Le Stourgeon briefly described the beekeepers' activities in Texas during the past 25 years, concluding with what they accomplished in the forming of a co-operative association for marketing and buying. He called attention to other such associations in other States and to the condition of the honey business and market in those States in which no such associations exist. He then mentioned briefly the occurrences which brought about the forming of the new league, and drew a picture of the future of the league as foretold by the success of the associations in Texas, California, Colorado and other States. The applause that followed his speech indicates that the League has no lack of support among the Texas beekeepers.

Among the other papers of importance was one by E. E. Rippert, the new Extension Service Entomologist, on the economic aspects of agriculture. It was voted to request that this article be printed in the American Bee Journal. The final session of the meeting was held in the experimental apiary. The work was in charge of C. S. Rude, State Inspector of Apiaries, and H. B. Parks, State Apiculturist. Demonstrations illustrating the treatment and control of foulbrood were given. An experiment under way in apiary No. 1 was exhibited to the beekeepers.

The beekeepers left College Station carrying with them this slogan: "The meeting next year with 500 present and all beekeepers."

## A GOOD BEE COUNTRY

By Amos Burhans

While on a recent vacation trip into that great country of agricultural and other opportunities called the cut-over lands in northern Wisconsin, I made the acquaintance of Postmaster Brown, of Minong, who is building up an apiary that now numbers over a hundred and twenty-five colonies.

The one thing that claimed my attention in this apiary more than anything else was the superiority of the pure bred Italian bees over the black and hybrids. I visited this section about July 1. The white and red clover bloom was at its height. Wild flowers and other blossoms were everywhere in abundance. Mr. Brown's Italians were in ten-frame regular Langstroth hives and almost perfect weather prompted them to great work in the fields. Seven of his Italian colonies were gathering what apparently looked like twice as much honey as any of his strongest hybrid colonies.

In getting started Mr. Brown bought several dozen colonies of hybrids, which he is increasing by swarming and dividing. He is requeening all with pure breds as fast as possible. He had 60 queens on the way to him, which will give an idea of the extensiveness of his operations and work.

Much of the equipment he secured with the purchased hybrids and all of which he plans to abandon, was 8-frame size, too small for commercial honey production on the scale he is working towards. Mr. Brown has 20 odd colonies in Minong, on the home premises, and nearly one hundred in his outyard three miles east of town. He has put a good many years of study into the handling of bees, but only lately began pushing the work for profit. There is basswood, goldenrod, berry bloom of all kinds, buckwheat everywhere, and more and more clover of all kinds every year in this section.

Land and lumber in this country are much cheaper than elsewhere, and it is a surprise to me that more beekeepers do not discover it or develop in it. A few cows, some root and grain crops and poultry would provide a generous living. Fuel can be had anywhere for the asking and cutting up.

This combination, along with some big, strong colonies of Italians to reap the honey harvest that abounds, would insure independence and relief from financial worry. It is a wonder that more suburbanites and city workers do not find modern beekeeping and small farming a route to security and peaceful life.

## SUMMER MEETING OF NEW YORK STATE ASSOCIATION OF BEEKEEPING SOCIETIES

Over 500 beekeepers of New York and surrounding States, together with their families, spent August 6 at the home apiary of Archie Cogshall, at Groton, N. Y., where an extensive program was presented. Aside from a number of New York beekeepers who appeared on the program, Ernest Root, of Medina, Ohio and Kennith Hawkins, of Watertown, Wis., spoke to the assembly. Mr. Root gave the resume of experiments being carried on in shipping bees and investigations of the food value of honey. Mr. Hawkins reviewed impressions of the honey crop following a month's tour of 11 States which ended at New York.

Dean Mann, of the College of Agriculture, Cornell, reviewed for the members the efforts being made at Cornell University intended to benefit New York beekeepers. George H. Rea, federal extension man for the State, spoke in his inimitable way of conditions in the State and projects being considered. The chief apiary inspector from the State Department of Agriculture at Albany, reviewed the disease situation in New York, while S. D. House, O. L. Hershiser and other New York beekeepers talked on efforts toward beekeeping legislation and prices recommended to beekeepers of the State for their honey crop. A feature of the day was a picnic luncheon served in Mr. Cogshall's orchard and the reunion of New England beekeepers. Cornell University has a number of excellent projects "up its sleeve" which are being unanimously backed by all the progressive beekeepers of New York. Members' reports indicate a fair honey crop in New York this year, with the State "spotted" with drought affected areas.

## A GOOD START

I started with one colony of bees when 16 years old. I am now 22 and have 52 colonies, after making up for the heavy loss last winter. This year's crop will be 100 pounds of white honey (clover and basswood) per colony.

ROBERT G. NORMBERG.
Minnesota.

## PRICE CUTTING

By A. C. F. Bartz.

Of all the ills the beekeeping industry suffers from, there is, according to the views of the writer, none more detrimental than the one known as price cutting.

It seems that honey, at one time pronounced a fit food for the gods, fate has now decreed to go through the land a beggar, striving in vain to gain the attention and popularity it deserves and enjoyed in older days. But the most discouraging feature of the deplorable situation is, that so many honey producers are satisfied to work for little or nothing, just as long as they can get rid of what they produce. And after they have sold their crop they declare they could have sold a lot more if they had it, when in reality it means that they could have given away a whole lot more.

A careful account kept for the last twenty years shows the average crop of surplus per colony is 40 pounds. And the last ten-year period, ending in 1917 and including that season, shows that it costs 30c per pound to produce honey in this section of the country. But the price of labor and commodities, excepting honey, have increased somewhere around from 25 to 50 per cent since 1917, which makes the cost of honey production considerably higher than above stated.

It is true, the methods of honey production are also improving, but nevertheless, the cost of production is far above the selling price. It is ridiculous to pay a hired man $5 per day for an 8-hour day, and the beekeeper work sixteen hours at $2.50 per day, and in addition furnish a $5,000 equipment

The Chippewa Beekeepers' Association, at a meeting held at Chippewa Falls, Wis., on the 22nd of June, decided to improve conditions, locally at least, by conducting a honey advertising campaign, and agreed to institute a honey cooking, baking and candymaking contest, awarding premiums as follows: $3 each for the first prize on the best article of cake (any kind), cookies, pie, beverage and candy; for the second prize, $1 for the third, and 50c for the fourth.

The money to carry on this campaign is obtained by the beekeepers of this association by a 2c per colony assessment, on the fall count of colonies. The contests are to be held in different parts of the county. The first one was held in Chippewa Falls, Chippewa County, Wis., during the latter part of August.

Wisconsin.

### Squibs From the October, 1870, Number

"The yield of honey by various plants and trees depends not upon the character of the season but on the kind of soil on which they grow." (If this statement is true how can we account for the different results of different seasons?)

"A good swarm of bees, put in a diminutive hive, in a good season; may be compared to a powerful team of horses harnessed to a baby wagon, or a noble fall of water wasted in turning a petty waterwheel."—Langstroth.

"The smell of their own poison produces a very irritating effect upon bees. A small portion offered to them on a stick will excite their anger."

"Bees sometimes abandon their hives very early in the spring or late in the summer or fall. They exhibit all the appearance of natural swarming; but they leave not because the population is crowded, but because it is either so small, or the hive so destitute of supplies that they are discouraged or driven to desperation. I once knew a colony to leave a hive under such circumstances, on a spring-like day in December. They seem to have a presentment that they must perish if they stay, and instead of awaiting the sure approach of famine, they sally out to see if something cannot be done to better their condition."—Langstroth.

"In bee culture the chief factor is intelligence, and not capital. The former must produce the latter."

"After a swarm of bees is lodged in their new hive, they ought by all means to be allowed to carry on their operations for some time without interruption."

"Light colonies, deficient in honey, should be fed in the latter part of September or early in October. If feeding is done early, in some seasons where late forage is abundant, there will be a great waste of honey."—Langstroth.

# THE EDITOR'S ANSWERS

Questions are answered in order received. As we receive more questions than we can answer in space available, two or three months sometimes elapse before answers appear.

### Giving Combs to Bees to Clean

1. I am extracting honey. I notice a lot of honey sticks to the comb. Should I put these frames back on the hives and let the bees clean the honey off?

2. When I take them off again in 2 or 3 days, to stack them away for the winter, what must I do to keep the bee moth out of the combs?

3. What is the best way to get honey out of old, dark combs, for wax?

4. I melted comb and honey all together in a capping melter. I noticed after the honey came off from the separator can that it was very dark and thick. What can I do with it?

ILLINOIS.

Answers.—1. Yes. Put them back on the hives in the evening and leave them on long enough for the bees to clean them. Some people have trouble with the supers in this way, finding that the bees store honey in them again. In that case, if you wish them to remove the honey to the brood-combs, just place the supers under the brood-chamber. You might do so in the first place if there was no danger of robbing. But when you put supers that are wet with honey under a hive, sometimes they are too much excited to fight the robbers. After the supers have been on top for a few days there is no more occasion for excitement. However, if you put the supers under the brood-chamber late in the evening it is quite probable that the bees can clean them before morning. Use care, however.

2. If you take them off before cool weather comes you should place them in a closed room and use either sulphur fumes or bi-sulphide of carbon, as advised in former issues of this magazine. If you leave them on till after frosts, there will be little danger of moths.

3. To get honey out of old combs, use the extractor. Some of the finest honey that we ever harvested was taken out with the extractor from combs that were almost black. Then give the combs to the bees to clean out and afterwards you may render them into wax.

4. Honey that has been spoiled in this way is not fit for much. You may be able to sell it to tobacco manufacturers, for they use almost anything in the way of sweets for chewing tobacco.

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### Wintering—Moving Bees

When ought I to place bees under a shed for winter, to be packed with leaves? How prevent loss by moving? How move them back in the spring? WISCONSIN.

Answer.—These questions are tangled together, for the very matter of moving colonies back and forth sometimes causes more loss than leaving them separate. That is why so many people keep their bees the whole year in their winter cases, and it is also the reason why beginners, who do not know of colonies losing bees by "drifting," lose the weak colonies, since their bees drift to the stronger ones.

Bees know the exact spot where their hive is, after they have taken one flight. If you move it, you must in some way call their attention to that fact, so they may take note of the change. Our way is to disturb them greatly and release them, while disturbed, so they may take note of the change. A slanting board in front of the entrance compels them to turn and look back.

Move your colonies together early, say in late September or early October. Then pack them. Move them back after they have had cleansing flights, otherwise the tired bees might not return to the new spot. But, better than all this, try to keep them close enough together, say in lots of 2 or 3, so that you may not have to move them back and forth every season.

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### Honey and Kerosene

I have about 30 pounds of this year's honey. I am only 10 years old and own 3 colonies, which I made of one, and the bees will not have enough to winter on without it. I had it extracted and the can it was put in had kerosene in it. Will it hurt the bees, and will they accept it? OREGON.

Answer.—I have never had any experience with honey and kerosene mixed. If the honey has only the flavor of kerosene and not any quantity of it mixed in, probably it would do no harm to the bees, if they take it. It may be they will refuse to take it. Try to feed it to them. It is a mistake to make too much increase, and if you become an experienced beekeeper, which you are likely to be, you will find that it is usually an error to try to more than double your colonies in a season.

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### Sour Honey for Feeding

Please inform me whether or not it is safe to feed old honey, a little sour, to bees in the fall when there is no flow of nectar for their winter supplies, and at what time to feed it. INDIANA.

Answer.—No, it would be unwise to feed to bees, for winter, honey which is sour, although if the winter should be mild they might not suffer from its use. If the winter is severe, they would probably die of diarrhea Better keep that honey to feed in spring, and if you must feed for winter, use sugar syrup.

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### Honey Above the Hive—Fruit for Bee Feed

1. I have a colony of bees which is storing all their honey in a super, and none in the brood-chamber. Will it be best to let the super stay above the brood-nest, or would it be best to put this super under the brood-chamber? There is no honey in the brood-nest, and but little brood. If I put the super with the honey under the brood-chamber will they move the honey? I have two hives in this same condition. My bees are working on goldenrod.

2. I find that a lot of my bees are working on peaches which are decaying. Will they convert it to honey, or what will they get from the decayed fruit?

3. If I let the super which has the honey stay on the hive above the brood-nest, will it be too far for them to get it in the winter time?

4. I have a house built out of poles, daubbed inside and out with clay-mortar. Will this be a good place to winter my bees inside? I am using it at present to cure tobacco, but will finish in another week. NORTH CAROLINA.

Answers.—1. If you place the supers under the hive, the bees will move the honey to the higher story, for they dislike to have their honey between them and the entrance, as they cannot defend it so easily against robbers. But when the honey is sealed, they sometimes hesitate a long time to move it. As you live in a comparatively warm climate, it might be safe to leave the super at the top.

2. Peaches and other fruit make very poor food for bees. It is not honey, and it rarely ripens enough to keep from souring. So it would be advisable to extract that bad food before winter and to feed granulated sugar dissolved in half of its weight of water. That should be done before cold weather.

3. Honey in a super above the brood-nest may be in convenient position for the bees, if there is no honey-board or partition between the lower and the upper stories. For the bees to reach it conveniently, there should be nothing between the upper and lower frames.

4. The place which you describe would not do to winter your bees unless they can be arranged in it so as to have a flight on warm days. Confining them to the hive in such a shed would cause them to fret and die on warm days. We would advise leaving them preferably on the summer stand.

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### Wintering Queens Apart From Bees

I have a number of hives from nuclei, divided in July. Some are doing first rate, others not so well. When fall comes, will have to unite so as to give each hive a respectable cluster, and in the spring would like to subdivide them again into same number of hives. How can I winter the queens, meantime, apart from their bees? How did Pratt, from Swarthmore, winter 75 in one hive? DELAWARE.

Answer.—We tried the Pratt method; did not succeed. We do not believe it is usually successful, though some people may succeed. We doubt that Pratt himself tried it often. If you can succeed with what you suggest, we would like to hear about it. We have never considered it practical. Did any of our readers ever try and succeed? How many times?

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### Indications of Swarming

I bought 3 hives last fall; one was very weak and died out. I now have 2 strong hives. What I want to know is this: What are the general indications of the hive when about to swarm? Can you tell 2 or 3 days prior to swarming? What is the matter with them when they hang out on the hives and fight or drag one another around? I have watched mine several days and found them restless, noisy and seemingly fighting each other. They seem to be settled down and more quiet now. KANSAS.

Answer.—It is not an easy thing to tell from outside indications anything about when or whether a colony will swarm, unless it be their running about on the front of the hive just as they are about to begin swarming. Sometimes they will cluster out a day or two before swarming, but that's no sure sign, for if the weather is hot and the colony strong they may hang out when they have no notion of swarming and if well ventilated they may swarm without hanging out.

But it is not hard to look inside the hive and then you can make a pretty good guess as to their intentions. If you find a dozen or more queen-cells started, you may expect a swarm to issue about the time the oldest cell is sealed over and that is usually about eight days from the time the egg is laid in the cell. Even then you cannot always be sure they will swarm, for if, by any means the honey-flow suddenly ceases, as by a cold, wet spell, or a severe drought, swarming will be given up and the cells be torn down. There may be cells present not intended for swarming, but superseding; but in that case the cells are likely to be not more than four or five. Sometimes, however, cells may be started for superseding and changed to swarming, and *vice versa.*

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### Queen Rearing—Extracted Honey

1. What is a good way for a small beekeeper to raise 8 or 10 queens at a time?

2. What are the main requirements to meet in order to advertise your honey as "pure extracted honey?'

3. Is a hive raised on 4 1-inch square blocks (one on each corner) too much ventilation in cool weather?

4. What is a good way for increase on a hive to say four more colonies?

5. Say, for instance, I would get 2,000 pounds of extracted honey some year What is a good way to dispose of amounts like this? What is being paid for extracted honey at present? Comb?

6. What is a good way to operate 100 colonies for extracted honey?

7. What is a good way to winter bees in damp, rainy, cool winters?

8. Is it a good plan to scatter your hives, set them in fives, or how would you advise so that they can tell their own hives quickly?

9. Have you any record of a bee disease that invades the western beekeepers (Washington) every few years, or is there no certain disease? WASHINGTON.

Answers.—1. Select the colony that you think has the best queen in the yard. Give it brood, or brood and bees, from other colonies, till you have a strong colony with a dozen or more frames of brood. When a good flow of honey is on, take two frames of brood with adhering bees and the queen, and put in a hive on a new stand. A lot of queen-cells will be started in the queenless colony, and before the oldest has time to hatch, say in about 10 days, divide the colony up into nuclei having one or two broods in each nucleus. See that each nucleus has a cell located near the middle of the brood-nest, and for this purpose you will need to cut cells from some combs and fasten them on others. If you are very successful you ought to have a laying queen in each nucleus in about a month from the time you took the queen away. At the time of breaking up the colony into nuclei it will be well to let the hive containing the queen be returned to its old stand, letting a nucleus take the stand the queen has just left.

2. The chief thing is to have an article well ripened and of best quality.

3. No, during hot weather and honey-flows; yes, before and after.

4. Do as directed in the answer to the first question, and let each nucleus build up into a colony.

5. Put up a sign, 'Honey for Sale," and let customers call for it; go to the homes of customers with sample and take orders; or, leave it at groceries, either selling or trading it outright, or letting it be sold on commission See quotations in bee journals for present prices.

6. Get all the information you can from books on beekeeping, from bee journals and from attendance at bee conventions, and then from all this select the plan or plans that you think best fitted to your conditions.

7. The same as for any other winter. You cannot tell in advance whether a winter will be wet or dry, cold or hot—although winters are not likely to be hot in your locality.

8. Yes, the greater the dissimilarity in appearance the better; although for the convenience of the beekeeper I prefer regular

groups of four. See discussion of this matter in June Journal.

9. I don't know of any disease occurring periodically.

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### What Kind of Plant

I send you by parcel post some plants that grow here, especially in the limestone quarries. They blossom continually from now until a killing frost in the fall, and the bees work on them all the time. I have seen them leave sweet clover alone right beside these and work on this plant. Can you tell me what its name is and describe it and its general value as a honey plant? NEW YORK.

Answer.—The plant is the Blueweed or Viper's bugloss (*Echium vulgare*). It belongs to the Boraginacea family, having a woolly stem, like borage. You will find it described on page 45 of 'American Honey Plants," by Pellett. Sladen lists it as an important honey plant in southern Ontario. It is probably not abundant enough to be of importance in many places.

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### Size of Hive—Foundation

1. An old beekeeper here told me that my hives were too large for this country (I have 10-frame Langstroth). Is an 8-frame better than a 10-frame hive where the amount of surplus honey is no large amount, say 40 of 50 pounds average? This is my second year with bees, and if this is so, next year I will order 8-frame hives.

2. This same man told me that a new swarm would not stay in a hive with full sheets of foundation as easily as with starters. Is this so? TEXAS.

Answers.—1. Having never kept bees in Texas, I do not know upon what basis your "old beekeeper" builds his assertion. But I know that an 8-frame hive is not large enough to develop fully the breeding capacity of a prolific queen. So, if a queen in an 8-frame hive can produce bees enough to harvest 40 pounds of honey, I am of the opinion that the same queen, if prolific enough, will produce bees enough in a 10-frame hive to harvest 50 pounds of honey.

2. On this question, also, it would be interesting to know what reason the "old beekeeper" gives to explain why a swarm would not stay as readily in a hive full of foundation sheets as in a hive containing only starters. We have never seen any cause for making such a statement.

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### Molasses for Food

1. Can Molasses be fed to bees to save syrup and honey?

2. What is present price of molasses in barrel quantities? DELAWARE.

Answers.—1. During the time when bees are flying daily almost anything sweet may be fed with safety, provided the bees will take it. For winter stores one must be more particular. On the whole, however, when one cannot have good honey, nothing is better than the best granulated sugar. Even at its very high price, men of large experience are buying it this year to feed by the ton.

2. I don't know, and what I could buy it for here, might be no guide for you.

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### Drones

In looking over a hive of bees for queen-cells I found a strong hive with plenty of worker brood and plenty of honey. That hive had 5 combs that had drone-cells that were nice and clean, but no sign of drone-brood or eggs in drone-cells. The queen had laid in all the cells right up to the edge of the drone-cells and then had passed on. There were between 50 and 100 drones in the hive, and part of them were black, showing that they were raised in some other hive.

All my other hives have an over abundance of drones and drone brood, and my records show this queen to be 2 years old. If you can see in this any chance of developing a strain of queens that would refuse to lay drone eggs she is at your disposal, as she is supposed to be of your strain.

Answer.—If bees are anxious to rear drone-brood, they will go quite out of their way to do so, sometimes when there is no drone-comb inside the cluster passing over one or two frames outside the cluster to occupy drone-combs. If conditions are such that they do not wish to rear drones, drone-cells inside the brood-nest will be left unoccupied. Not always, however. I have seen a good many cases in which drone-cells had eggs laid in them, and *workers* were reared from the eggs. But before eggs were laid in them the mouth of each drone-cell was contracted to the size of the mouth of a worker-cell. So it is nothing unusual to find plenty of worker-brood, but no drone-brood, although drone-cells are convenient. But at a time when colonies in general in the same yard are rearing drones, to find a queen *two years old* with drone-cells easily within reach unoccupied, is unusual. The likelihood is that at least some of her royal progeny will show the same characteristic, and by persistently selecting such to breed from, there is a probability that in time this characteristic may be more or less fixed. No great skill in the case is required on the part of the beekeeper, and you may do the work perhaps as well as an expert. But patience is required in anything of the sort, and you must not expect results in a day.

(When queens are very vigorous, they often prefer to lay in worker-cells. The drones that you mention as being in the hive may be her own drones, as the color of the drones is often irregular.—Editor.)

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### Unfinished Sections

How do you get the bees to take the honey out of the unfinished sections, so that these may be used as bait sections the following year, and without having the combs torn to pieces? Or do you leave the honey and use the sections as they were taken off, provided the honey in them is not granulated? CALIFORNIA.

Answer.—I wouldn't want to have the least bit of honey in bait sections, whether it was granulated or not. If there is honey enough in the sections they may be extracted. Whether extracted or not, they should be cleaned out by the bees. I have tried different ways of getting a colony to clean out sections without letting the bees of other colonies have access to them, but never with great success. So the sections must be set out in the open, allowing the bees to *rob* them out. If you set out a single super of sections for ten or more colonies to rob out, you may count on the combs being torn to pieces. Reverse the thing, setting out ten or more supers with only one colony to work on them, and there will be no tearing. So if the number of sections to be cleaned be large, give the bees full access to them; the more exposed the sections are the better. But if the sections be few in proportion to the number of colonies, say less than a super for each colony, then give the bees very limited access to them. Pile five supers in a pile, and allow an entrance for only one bee at a time. Or, pile the supers up higher, and allow the small entrance named for each five supers.

(A very good way to get the bees to remove the honey is to place the super under the brood-chamber instead of on top of it.—Editor).

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### Ventilation—Introduction

1. Are 1-inch blocks too high on bottom-boards to raise the hive for ventilation? They have not built any comb from bottom frames to bottom-board yet.

2. I have a colony to which I gave the above ventilation and have them tiered up about five stories to prevent swarming. The other day I noticed a few bees at the entrance fanning with their heads half in the hive. What was the meaning of this?

3. Will a pound of bees and a queen received June 14 build up by fall?

4. When I receive a queen could I take the old queen and give her a 10-frame super and bees in it and set her on a stand and introduce the new queen to the colony?

5. What is the best way to run for extracted honey?

6. What is a good way to unite bees? WASHINGTON.

Answers.—1. With a space of an inch between bottom-bars and bottom-board there may and there may not be combs built down. But these may easily be cut away when it comes time in the latter part of the season to let the hive down.

2. It meant that fresh air was needed in the hive. No amount of space under the hive, and no amount of tiering up, can be counted on as a sure thing against swarming. But you can greatly increase the effectiveness of tiering up if you have ventilation between each two stories, "staggering" them, that is, shoving the stories alternately forward and backward.

3. Very likely, if the season is good enough.

4. Yes, it will make introduction safer if you give the new queen to the super placed on a new stand. I you want the new queen on the old stand you can afterward let the two hives swap places.

5. Just put on extracting combs a little before the bees are ready to store surplus.

6. The newspaper plan is a good way. Put a sheet of newspaper over the topbars of one hive and set the other hive over it. The bees will dig down the paper and unite kindly. Four or more days later you can assemble in the lower story the best frames of brood of the two stories.

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### Requeening—Best Race

1. When is the best time to change queen? I have a hive of native bees and I don't like them, so I want to know when is the best time to kill the old queen and introduce an Italian queen; and will they accept a queen of different breed?

2. Do bees know their master? I can do anything with my bees and they won't sting, but when a stranger gets near the hives they sting him.

3. Last year I got 7 supers of honey from one 10-frame hive. Does anyone ever get any more? The bees that did the job I got out of a tree the year before. I got 46 one-quart fruit jars full of strained honey.

4. The bees don't swarm. What is the reason?

5. Which is the best honey producer, the golden or leather colored Italian bee? WASHINGTON.

Answers.—1. Other things being equal; there is perhaps no better time than toward the close of the harvest. You can get as good queens then as at any other time; the cost of a queen will be less than early in the season, and changing the queen then will interfere less with the honey harvest. Of course, if it is early in the season and you want a new queen to breed from that season, it would be better to get the queen earlier in the season. A colony will accept a queen of any other breed.

2. No, I don't believe bees know their master. Some people are more likely to be stung than others, because of their movements, odor, or something else; but such persons are as likely to be stung by their own bees as by others.

3. As many as 16 supers of sections have been stored by a single colony, each super containing 24 sections. Of course the yield would be greater if the honey were extracted.

4. Hard to say. It may be that your management may have had something to do with it, and it may be that the bees are somewhat inclined to non-swarming.

5. Some goldens may be better than leather-colored in the same yard, and the reverse may be the case. Take it as a general rule and the leather-colored may be the better.

### Transferring—Drones

1. How late in summer can I change bees from old hives to modern hives?
2. My bees look to be one-third drones at times. What can I do to get rid of them?
3. What is the trouble when bees bring out larvæ that are black in color? Have they a disease? If so, what is the treatment?
TENNESSEE.

Answers.—1. Don't attempt to do it when the crop is over. You might succeed, but the chances are against you. The best time to do it is spring, when the first fruit trees are in bloom. During the honey crop you may drive the bees out into a box and then hive them in a good hive just like any other swarm. Then place the old hive near the new one and at the end of 21 days shake all its bees in front of the new hive and remove it to use what honey and comb there is in it.

2. You might use a drone trap, but that is a nuisance at best. Better remove all the drone comb in the spring and replace it with worker comb. That is the only rational way.

3. Carrying out of dead larvæ by the bees may be caused by starvation, or sacbrood, or European foulbrood. Open the hive, and if you find dead brood in the combs cut out a piece of comb and forward it to Dr. E. F. Phillips at the Bureau of Entomology at Washington. He will tell you just what it is and give you advice free of charge. Be sure and pack it so it will carry safely without leakage or breaking. If you write to Dr. Phillips beforehand, he will send you a box in which to mail the diseased combs.

### Sweet Clover—Mating

1. Does melilotus always yield nectar, or is it like other plants, a failure sometimes?
2. Should I devise a way to mate a young queen with the drone that I wanted to and know that it was done, would it be profitable? That is, would it be a money-making business? Has such a thing ever been tried? If so, will you give some of the ways that have been tried?
MISSISSIPPI.

Answers.—1. Melilotus is just like any other plant. There are times when there is no honey in its bloom. Honey yield depends much upon the weather. There are also localities where one honey plant will yield while it may not in another. So far, there is no valid explanation of this.

2. If you can devise a way to mate a young queen with the drone of your choice, you will achieve something that no one has been able to do. It would be profitable, of course. The thing has been tried, by artificial or forced copulation, by shutting the queen with the drone in a glass cage and also by putting the queen and a lot of drones in a vast screened house. An occasional success has been claimed, but it was either an accidental success or a sheer mistake. We don't believe it can be done; yet in this time of aeroplanes and wireless telegraphy, who knows what might not be done?

### Martins

I have my first colony of bees, also a numerous family of martins. Now comes my neighbor, a mountain Kentuckian, and tells me the martins will eat all my bees. I killed one of the martins and could find no bees in him, and now I am feeling rather badly about it. Please tell me if I should get rid of the birds. If so I will take down their box, for I don't believe I want to kill another one of them.

P. S.—This is the box martin, not the so-called bee martin or kingbird.
KENTUCKY.

Answer.—If you refer to the purple martin, known as *Progne subis* by scientists, we have never heard of its eating any bees, though it feeds on insects, as do all the swallows, to whose family it belongs. As to the king bird, or bee martin, *Tyrannus tyrannus*, although it eats bees, there is a question as to whether it eats any but drones. The American Bee Journal, in 1895, published 9 articles, at different times, on the kingbird. The statement was made there that in 1893 examinations made under the direction of the Secretary of Agriculture showed that, among 171 stomachs of bee martins or kingbirds examined, only 14 contained bees. Out of these 14 stomachs, 50 bees were taken, but only 4 of them could be identified as workers, 40 of the others proving positively to be drones. The conclusion is that, except in a queen-rearing yard, where they might eat young queens at their wedding flight, the bee martin is more beneficial than injurious, for it eats thousands of other insects. As to the one to which you refer, we find nothing against it anywhere. If any reader of this knows facts on the subject, we will be glad to have them.

### Will Bees Do Well?

Will bees do well one or one-half mile, more or less, from the ocean? WASHINGTON.

Answer.—An apiary one half mile from the ocean will lose a part of its pasture, since bees go at least a mile for honey and pollen. But if the pasturage is very ample on other sides, it may not hurt the crop. We would prefer to have them about two miles from the sea. Then there would be little or no loss of pasture.

### Outdoor Wintering

What is your opinion in regard to the method of outdoor wintering as recommended by Dr. Phillips, viz.: packing in four colony cases? I have studied his bulletins quite closely and his reasoning appeals to me. I intend to adopt his plan, as I have no cellar suitable for wintering. WISCONSIN.

Answer.—The method recommended by Dr. Phillips is certainly good. The only objection is its cost. But it probably pays to follow it, even if the outlay is large. Where we are located, the winters are rarely very cold without some warm days, and bees winter fairly well. But in the North, it is best to follow some method of heavy packing. We would prefer 2-colony cases to 4-colony cases, because we do not have to move the bees for winter, and none of them need face north. We don't like a north entrance. Wintering depends so much upon locality that each man must decide for himself what method to follow. But the Phillips methods will certainly not disappoint you.

### Honey Vinegar

Kindly give method of making honey vinegar and explain how a hydrometer should be used; also what degree of sweetness this liquid should be; number of days to ferment.
MISSOURI.

To make good vinegar there is no particular need of a hydrometer. Those instruments are not found easily, except in well furnished drug stores, and they are made of different kinds for different purposes.

To make good vinegar, take a pound and a half of honey for a gallon of water. Mix thoroughly and add some yeast, or some fruit juice, to start the alcoholic fermentation, which must precede the acetic. If you are trying to make vinegar out of water used in washing cappings and you don't know what proportion of honey you have in the liquid, just put an egg in it and add honey till the egg floats so as to show itself at the top of the liquid. If the egg shows more than the size of a dime at the top, the liquid is too sweet, and more water must be added.

To cause it to ferment, it must be kept warm, about 70 to 80 degrees. The length of time of fermentation will depend upon the temperature, and there is nothing definite about it. In good circumstances it will require a week to go through the alcoholic fermentation. Then, if the liquid has access to plenty of air, it will begin to sour. A little vinegar or vinegar mother, will help it to become acid.

They use all the way from one pound of honey to two and a half pounds, to make vinegar, but about the amount mentioned above is best. The more air you will give it, the faster it will sour, if kept warm. Vinegar makers let the vinegar drip through oak shavings to hasten the fermentation. Be sure and keep the flies away with either screens or thin muslin. Grape juice or apple juice, not boiled, will hasten the fermentation considerably.

### Races of Bees—Ants

1. I caught a swarm of bees August 3, 1919. They are bright yellow bees. Some tell me they are Italians. They are very gentle, but they don't seem to gather much honey. Can you tell the race of bees by looking at them?
2. I live in a small village and flowers are not very abundant in this locality. I was thinking of sending for a Cyprian queen, as I read that Cyprian bees gather lots of honey. As for managing them, I suppose I could get supers on and off by using a veil and gloves.
3. What would you advise getting, a Cyprian or Italian queen? Also where can I get Cyprian queens?
4. How do beekeepers having outapiaries keep their bees from being robbed by thieves, especially at night?
5. How do you keep ants away from hives, especially from double-walled chaff hives that are packed for winter?
6. Can you tell me who the apiary inspector of Illinois is? Have they also a county inspector? ILLINOIS.

Answers.—1. Italian bees have 3 yellow rings on the abdomen or 3rd section of the body, next to the thorax or middle section. Probably there is no honey to gather at the time of your writing.

2. Cyprian bees cannot gather honey if the Italians cannot.

3. We would advise buying Italian bees. There are very few Cyprian bees left in this country, probably none pure.

4. Thieves steal hives of bees once in a while. But if your outapiaries are near a farmer's home, there is no more danger of their being robbed than his hen roost, or his grain bins.

5. You will find answer to the question of ants in the July number.

6. The Illinois apiary inspector is A. L. Kildow, of Putnam.

### Swarms Clustering

1. Why do the bees form a cluster on a tree while swarming, instead of going straight to the place that they prepared for a home?
2. How do the bees manage the hunting and preparation of their new home before they swarm, and do the bees that expect to stay in the old hive have a part in that work?
NEBRASKA.

Answers.—1. The bees form a cluster, because the old queen, being heavy with eggs when she goes, appears to be unable to take a long flight without preparation. At least that is the surmise of all experts. To strengthen this opinion comes the fact that secondary or afterswarms, often fly away without settling, because the young queen is able-bodied and evidently does not hesitate to take flight. If anyone knows of a better explanation, let's have it.

2. We did not believe that bees hunted for a home before a swarm left, until we had the following experience, which we have recorded in the "Hive and Honey Bee":

About fifty yards from our home apiary there was a hollow oak tree, which we called the "squirrel's oak," because every season it sheltered a family of these pretty animals. One summer we noticed several bees flying in and out of a hole in one of its largest limbs. It seemed to us that they were cleaning the hollow, and we supposed that a swarm had taken possession of it. A change in the weather having taken place, the swarming preparations were discontinued and we never again noticed bees around this hole. The tree was cut down the following winter and no trace of comb was found in the hollow. It proved conclusively that the bees which we had seen were scouts in search of a lodging.

Evidently a few only of the bees which are bent upon swarming take any interest in the search and preparation of a new home. Most of the bees probably have no thought of it.—C. P. D.

### Eggs in Queen-Cells

In the American Bee Journal for June, page 203, you say that a queen does not lay in a queen-cell. How do eggs get in any queen-cell if she does not place them there? Do not bees build cells, when making preparations for swarming and the queen places an egg in each one? *I have seen a queen lay in queen-cells*, but I supposed it was due more to excitement when opening the hive. Have the bees power to move eggs? ILLINOIS.

Answer.—Beg pardon, but you took what "Michigan" wrote for our own statement. We wrote at the foot of the article that "we were inclined to believe that queens never lay eggs in queen-cells, until a number of people testified to seeing them do it."

You ask "how do eggs get in a queen-cell if the queen does not place them there?" We will reply with another question. How do eggs get into queen-cells, after the queen has been removed from the hive? We all know that if we make a colony queenless, even though there are no queen-cells built, the bees will have some built and larvæ of the proper age in them, within 2 or 3 days, if they only have the young larvæ to use. Let us watch the bees and learn more!

### Robbed Bees—Ants

I have a colony of bees in a common box gum, about 10 or 12 inches square and 3 feet tall. One night this week I attempted to rob it. Upon opening the top of the hive I found they had no honey handy. The comb ran up like mountain peaks, but did not seem to contain any honey. The man I bought this colony from said they swarmed about the first of June last year. This year they have not swarmed, to my knowlwedge. When I opened the hive I noticed a great number of small ants seeming to be inside the hive. I have understood that ants eat the honey. Can you tell me how to get rid of the ants and how to keep them out? KENTUCKY.

Answer.—The hive was evidently robbed last year, or before it was sold to you by the previous owner. The comb was cut out of the inside top. The bees, undoubtedly not being very strong in numbers nor very rich, attempted to build upwards from the cluster instead of building downwards from the top, as they always do when they are strong. That is why the combs are built in "mountain peaks." They have to brace them against each other when they build upwards. Bees have much more intelligence than some people give them credit for.

The fact that you tried to rob them at night shows that you need to "read up" on bees. There is no worse time than night to take their honey from them, as the old bees are all at home and there is much more danger of stings than in the warm part of the day.

If the ants were really on the combs it would indicate that the colony was very weak, as they never allow ants where they can keep watch of the combs. It may be that these ants were in some crevice on the outside, taking advantage only of the warmth of the hive. Of course they are fond of honey, but the honey of a healthy colony is not in any danger from them.

### Deserting the Hive

I bought 11 colonies of bees this spring. They were in perfect condition until about a week ago, when I noted that one hive was empty. When I looked in I found that the bees were gone and the honey had been taken out. Some wax had been chewedd off as if a mouse might have eaten it, but there was no hole large enough to let a mouse in. There was some brood in the hive. What do you suppose would cause the bees to leave the hive, and what do you think ate the honey that was in the hive? INDIANA.

Answer.—It might have been a case of starvation. It is possible the colony was overcome by robbers. In some cases in spring a colony deserts its hive with no apparent reason for it. In either case it was bees that ate the honey, and the chewings of wax left by them would look much like the work of mice.

### Goldens

I recently bought a golden queen, and when she came was black-tipped. Now was she a real, honest golden? Last year I experimented a little with them and all drones were leather-colored and the queens I succeeded in raising were as this queen, with a black butt, half golden, half leather. The mother golden queen was all gold on her body. You'll just have to answer for me, as you're about the only beeman that seems to answer what I want to know. PENNSYLVANIA.

Answer.—It is an accepted fact that among the Italian bees, neither queens nor drones can be relied upon to be always true to type in appearance. It is only the workers which are expected to show the regular three yellow rings on the abdomen. We have seen very dark queens which produced the finest-looking workers. A few queen breeders claim to produce queens that duplicate themselves in their progeny. But "I have me doots" about it. Don't be afraid to breed from this queen, if her workers are well marked, peaceable and active in field work. These points constitute the most important conditions in Italian bees.

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### Sealed Brood

Brood being sealed, does it require any nourishment, i. e., get any?
PENNSYLVANIA.

Answer.—Of course the nurses can do no feeding after a larva is sealed, but there may be some unconsumed food in the cell at time of sealing, allowing the larva to receive nourishment after being sealed. This probably never amounts to much in the case of worker or drone larvæ, but may be considerable in the case of queen larvæ. I have seen larvæ, in sealed queen-cells, not one-fourth the usual size.

### Mating Queens, Candy, Etc.

1. After hiving a swarm with a virgin queen or introducing a virgin queen, could I place a queen-excluder below the brood-chamber confining her and have her safely mate with the drone of that colony? If not, how can I purely mate her?

2. How can I make queen candy?

3. Can I make queen-cells out of beeswax? Advise me the best way.

4. Is the Rauchfuss queen cage all right for introducing queens?
MISSOURI.

Answers.—1. The queen must go out to mate. She can mate only on the wing, in the open air. You must take your chances on her finding a drone of her race. When the question of control of mating is solved, a big step forward will have been made.

2. Candy for shipping queens is made by mixing powdered sugar with honey, just as much as the honey will absorb. Candy for bee feed is also made by diluting sugar in water and evaporating it by heat over a stove until the water is evaporated. Be sure not to let it burn. To know when it is thick enough, dip your finger first in cold water, then into the syrup. If what adheres is brittle to the teeth, it is boiled enough.

3. Queen-cell cups are made out of beeswax artificially. Any dealer will sell you an outfit for making queen cups. But if you want to do it on a paying scale you had best buy "Doolittle's Scientific Queen Rearing," or "Pellett's Practical Queen Rearing."

4. Yes.

### Southern Locations

I am thinking some of going South to try honey producing, as I have lost most all of my bees here this last winter. Could you advise me as to what State would be a good location, or where could I find the necessary information?
MICHIGAN.

Answer.—On page 206, under the heading "Location," we have answered a similar question. There are good places in each State. Most of the eastern part of Texas, also south and west of San Antonio, is good. There are excellent spots in Mississippi, Alabama, and Georgia. A good way to locate a convenient spot is to go and see some of those queen breeders in the State that you think you would prefer. They will surely be able to direct you to some spot where you will not be in any other man's way. The most important requirement is to keep away from territory already occupied.

As to the State in which you should locate, it is better for you to select it yourself.

### Tar Paper—Short Bottom Bars

1. For covering brood-frames I have used tarred paper, also some of the cheap roofings, using something without gravel next to the bees. Of course I air it to get rid of some of the "perfume." I cannot see any harm to the bees or honey.

2. Why not shorten the bottom bars of brood-frames? I do not believe they will build burr comb three-fourths of an inch on bottom of hive.
ILLINOIS.

Answers.—1. Although tarred paper that has been fully "aired" will probably not cause the bees to desert, if we use it on top of the brood-frames, I should hesitate to use it on the frames of a hive in which I would hive a swarm. It might be used after the swarm has put brood in the combs.

2. Bees do not usually put burr combs in a space of three-fourths inch between the bottom bar and the bottom board. But they will do it if they become crowded for room. Italian bees do it more willingly than common bees.

## THE VALUE AND CARE OF DRAWN COMB

By F. W. Osler

In a short time extracting for this season will be over and preparation for winter will be in order. Among the many things too often neglected by the amateur beekeeper is the proper care of drawn comb.

The beekeeper who carefully assembles and wires his frames, uses full sheets of foundation, thereby insuring good straight worker comb and the elimination of excessive drone cells, should carefully guard them from wax worms and mice, either of which quickly destroy a set of combs. After extracting is over the supers should be placed and piled high on one or two strong colonies to clean and dry the combs. (This should be done late in the evening, to prevent robbing.) These colonies should be marked, for if foulbrood exists in the yard the colonies that clean out the combs are most likely to develop it, and should be carefully examined during the fall and following spring for any signs of the disease.

After the comb is clean and dry, which can usually be done over night, bee-escapes can be used to get rid of the bees. The supers should then be taken to the honey house or work shop. Each frame should be examined and all bur comb scraped off, to be run through a wax press or solar wax extractor later on. It is surprising how much wax can be accumulated in this way.

When the frames are cleaned, return them to the supers, spacing them wide (about 8 to 10 to a 10-frame super). Now place a cover on the ground, bottom side up, and place your first super in the cover; pile the others on top, put a queen excluder on the top one and an empty super with a tight cover on top of all. The combs are now ready to fumigate with carbon bi-sulphide. Take a shallow dish and fill it with carbon bi-sulphide solution and place it in the empty super resting in the queen excluder; close the cover and leave for 48 hours. This treatment should destroy the wax moth larvæ and will leave your combs sweet and clean for next summer's use. Frames of honey kept for spring feed should be treated in the same way. It is just as well to examine the comb two or three times during the following month to satisfy yourself that nothing further is developing, as it is a question as to whether this treatment kills the unhatched eggs of the wax moth or not. It is a good plan to put your comb out when cold weather sets in and give them a good freeze after the bi-sulphide treatment, but the fumigation must come immediately after extracting, as wax worms are fast workers. Frames of honey should never be frozen, but empty, dry comb will not be harmed by the cold.

Just a word of warning about carbon bi-sulphide. This solution produces a heavy gas, which falls through the supers, destroying the wax worms in the comb. The fumes are poisonous and highly inflammable and will produce headache and nausea if breathed too much. The open air is the safest place to handle it in. Perhaps it would be just as well to warn my readers to get their lives insured and phone the undertaker before drinking any of this solution.

Comb can be saved from rats and mice by keeping queen excluders on top of the supers.

Toronto.

### DES MOINES COUNTY MEETING

The annual meeting of the Des Moines County Beekeepers will take place at Burlington, Iowa, on October 20, 1920. Beekeepers are invited. For particulars address Mr. J. W. Stine, Route 4, Burlington, Iowa. Some one from the American Bee Journal staff will probably be present.

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NUCLEI for 1921—We beg to advise those who intend to purchase nuclei to enter their orders early in order to be certain of being able to obtain them, as the demand greatly exceeded the supply during the past season, and the majority of late orders went unfilled. We are now booking orders for three-frame nuclei of Italian bees, with Italian queen, at $6.50 Hybrid bees, with guaranteed pure Italian queen, at $5.50. Terms, one-third down with order. No disease, safe arrival and satisfaction guaranteed. Irish Bros., Doctortown, Ga.

BEES AND QUEENS from my New Jersey apiary. J. H. M. Cook,
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FOR SALE—Three-banded Italian queens; untested, $1.25 each; 6, $6.60; 12, $12. Select untested, $1.50 each. Satisfaction guaranteed.
W. T. Perdue & Sons,
R. No. 1, Fort Deposit, Ala.

FOR SALE—Goldens that are true to name. Select untested, one, $1.50; 6, $7.50; 12, $13.50; 50, $55; 100, $100.
Garden City Apiaries, San Jose, Calif.

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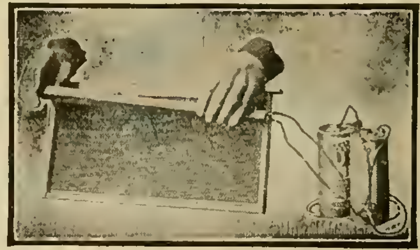

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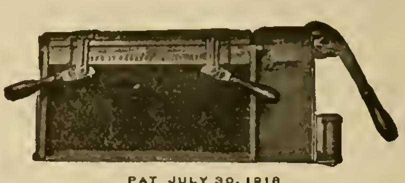

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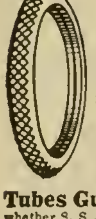

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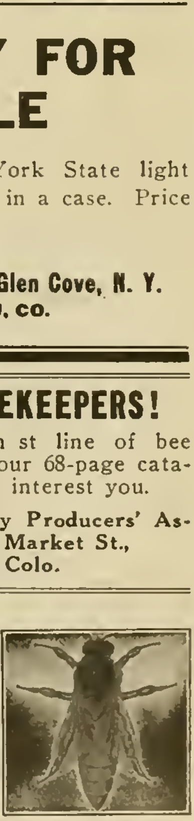

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# Crop and Market Report

Compiled by M. G. Dadant

For our October report we asked reporters to answer the following questions: 1. What has the crop been? 2. Condition of bees and honey plants? What is being offered for honey? 4. What are you asking, wholesale and retail?

## THE CROP

In the New England States the crop has been fairly good, Connecticut quoting it fine. Rhode Island, Vermont and Massachusetts seem to have had a shorter crop as well as Maine.

In New York the crop seems to have varied greatly, since some localities report a normal crop. Foulbrood has cut the output in some sections and is having its effect on the total of the crop.

In Ohio, Indiana and Pennsylvania the crop has been fair, and Illinois has a better crop than last year, although the fall flow fell short considerably of what was expected. There will be about half as much fall honey as last season. In Iowa there will probably be an average of 100 pounds per colony the State over, the western side of the State showing the best crop. Kansas and Nebraska have had generally fair crops of honey and Missouri will average probably 75 per cent.

In Michigan there will probably be 75 per cent as much honey as last year, while Wisconsin is blessed with a good crop, although not as many bees as usual to care for it. The average of reports from Wisconsin will give over 100 pounds per colony. Minnesota reports good crops also.

In the Southeastern States, although there has been a published report that the crop was extra good, our reporters state the opposite. In the Appalachicola district there will not be over one-third of a crop, and this will probably extend over Mississippi, Alabama and well up into Tennessee and Kentucky. In fact, in all of our reports we find no mention of anything like a normal crop, except in the Carolinas and possibly in Louisiana, which we understand in some sections has had an unusually large crop.

Texas early honey was in abundance, but the later crop does not seem to be yielding as well as last year.

In the inter-mountain States we find that Montana will hardly have half of last year, Idaho a little more than half and Colorado also hardly half of what was harvested in 1919.

In Washington and Oregon the crop has been fairly good, although nothing phenomenal. Arizona and New Mexico have also had good crops, but hardly up to last year, while California reports are conflicting. Some of them state there will be not over half a crop, while others have had an unusually large crop. From the amount of honey on the market now from California, indications are that the crop was nearly up to last year. Utah and Wyoming seem to have had very good crops.

## BEES AND PLANTS

Throughout the whole of the North, Central and Eastern States conditions seem to be improving for honey plants for next year. Some parts of the country were needing rain badly, but late rains have remedied this.

Few sections are affected by drought to the extent of having any influence on the 1921 crop.

## PRICES OFFERED

There seems to be a little shyness on the part of buyers of large amounts of honey towards quoting a price except for immediate delivery. Eastern beekeepers have sold comb honey at $7 per case, with extracted at about 18c to 20c. The usual offer is on a basis of 18c f. o, b. eastern points for nice white honey. The amount of New Zealand honey imported so far seems to have been small, so that it should not have had a large effect upon the market.

## WHAT IS ASKED FOR HONEY

In a retail way the country over, on a basis of 10-pound cans, the price is from 26c to 30c, and our reports would indicate that beekeepers are selling honey very freely for this time of year. In our own locality honey seems to be moving better than usual at this season. All beekeepers east of the Missouri river seem inclined to hold their honey at a good price, say 20c for extracted honey, wholesale, and many offers for white clover at 18c have been declined. In the Southeast the beekeepers generally are holding for a good price, also, owing to the fact that their crop has been small and they feel they must realize.

Colorado and Montana and Idaho, having a short crop, will undoubtedly hold their honey at a good price, say 18c to 20c for white alfalfa, with a proportionately good price for comb honey.

The Texas crop is practically disposed of, the Texas Association having handled this in an excellent manner for its members.

There seems to be a disposition on the part of beekeepers in the extreme West to get rid or their honey and to cut prices to do so. We know of many offers of carloads of amber alfalfa honey at 14c to 15c per pound, and one or two offers of extra fancy white sweet clover and alfalfa honey as low as 15c per pound. We can see no reason for this low price , even though the price of sugar is dropping. The demand for honey is good generally, although the large bottlers are not buying at the high prices.

In our estimation, whether honey prices will go down or not is to be determined largely from the attitude of the beekeeper, whether he is to force the price down in competition with his neighbor or make an effort to hold the price to a reasonable basis.

Without a doubt, the buyer of honey will not seek 20c honey when 14c and 15c honey, equal in grade, is being offered. We have several indications that the sugar market will drop more, and some reports are being circulated that the price of sugar, wholesale, is to go to 10c before it stops. This, however, is merely a conjecture. Nor is it necessary for the price of honey to follow that of sugar now that a good market has been created for the beekeepers' product.

---

A New Book, *"Dadant's System of Beekeeping"*

PRICE $1.00

ANNOUNCEMENT

¶ We can ship at once from stock the containers you need to market your crops. We are particularly well supplied with the following:

¶ Standard 5 gallon square cans in heavy, first class shipping cases, of either one or two cans each. Get our quotations on bulk shipments.

¶ Glass jars in assortments of 15, 16 and 20 ounce sizes, packed in cartons, 2 dozen each. These jars are a popular container and you cannot order too soon, and in sufficient quantities to market your crop.

¶ Square cans, with screw cap, packed in heavy cartons, particularly well adapted to parcel post shipments. We know of no neater, safer, cheaper way to send honey short distances. These cartons, properly marked, are great advertisers, too. We carry in stock the gallon, the half and fourth gallon sizes.

¶ We will be glad to estimate and quote on what containers you are going to need to market your crop, if you will let us know how much honey you expect to market. We believe that we can interest you.

¶ Remember, we can ship at once. Located as we are in the very focal center of Western shipping activities, we can save you valuable time, and perhaps excessive freight charges.

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Place your orders now. We have booked as many orders for pound bees as we can handle this season.

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| | 1 | 6 | 12 | 100 Each |
|---|---|---|---|---|
| Untested | $1.50 | $ 7.50 | $13.50 | $1.00 |
| Select Untested | 1.75 | 9.00 | 16.50 | 1.25 |
| Tested | 2 50 | 13.00 | 24.50 | 2.00 |
| Select Tested | 4.00 | 22.00 | 41.50 | 3.35 |

No reduction in prices after July 1 as stated in circular.

**W. J. FOREHAND & SONS, The Bee Men**

**Fort Deposit, Alabama**

**QUEENS** **PACKAGE BEES** **QUEENS**

ORDERS are coming in daily for 1921 SHIPPING

My FREE Circular gives prices, etc., in detail. Safe delivery GUARANTEED. We ship thousands of pounds all over the United States and Canada.

Our Fall flow is very favorable for Queen rearing up to about Christmas. So we can furnish you queens the balance of this year at the following prices:

| | 1 | 6 | 12 | 50 | 100 |
|---|---|---|---|---|---|
| Untested Queens | $1.50 | $7.50 | $13.50 | $48.00 | $95.00 |
| Select Untested Queens | 1.65 | 8.25 | 14.85 | 52.80 | 104.50 |
| Tested Queens | 2.50 | 13.50 | 27.00 | 110.00 | |
| Select Tested Queens | 3.00 | 16.30 | | | |

**NUECES COUNTY APIARIES, E. B. AULT, Prop. CALALLEN, TEXAS**

# THREE WAYS IN WHICH BEEKEEPERS CAN SAVE

**So long as lumber, together with all kinds of iron products and labor costs, remain at present abnormal prices, the prices of beekeepers' supplies will have to remain abnormally high, too. We dislike this situation as much as the beekeeper. It is no good to us, and we know it, and we trust the situation will correct itself as the war times recede.**

**In the meantime can the beekeeper do anything to economize and at the same time keep his business going full steam ahead? He can. There are three ways open to him right now:**

**MONEY-SAVING PRE-WAR PRICES.**—There are pre-war prices still existing on some considerable lists of goods kept at our Branch Offices at Philadelphia, Norfolk, Indianapolis and Chicago, and at the Home Office at Medina. These lists of very low-priced supplies include shipping cases, bottom-boards, covers, frames, sections, smokers, queen-rearing tools, fences and separators, etc. These are new goods, but in most cases they are in sizes or styles that we no longer list, and so prefer to close them out at a big sacrifice. Those who can manage to use these goods will make a big saving by ordering while they last. The prices are only one-third to two-thirds the prices now made on standard goods. They are offered subject to previous sale. Don't delay. Write for lists to Medina Home Office.

**SAVE FREIGHT CHARGES.**—We have car-lot agents at many points over the United States, as well as Branch Offices at 23 Leonard St., New York; 10 Vine St., Philadelphia; 224 West Huron St., Chicago; 290 East 6th St., St. Paul; 10 Commerce St., Norfolk, Va.; 874 Massachusetts Ave., Indianapolis; 224 Poydras St., New Orleans. By ordering from our nearest agent or Branch Office you will save freight charges—and these freight charges have advanced about 70 per cent as the result of the war.

**EARLY ORDER DISCOUNTS.**—By taking advantage of our early order cash discounts you can save 7 per cent in October, 6 per cent in November and 5 per cent in December. Send for our year-end special price sheet, too, when taking advantage of these early order discounts.

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# AMERICAN BEE JOURNAL

NOVEMBER, 1920

GOVERNMENT BEEKEEPING LABORATORY AT OTTAWA, CANADA

# WHEN THE BEES STING

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## WAX---OLD COMB

We pay you the highest market price for rendered wax, less 5c per pound rendering charges. Our rendering process saves the last drop of wax for you. "Put your name on all packages."

## HONEY

Send us a sample of your extracted honey. We also buy comb honey. Tell us how much you have and what you want for it. We pay the day shipment is received.

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**CINCINNATI, OHIO**

*"THE BUSY BEEMEN"*

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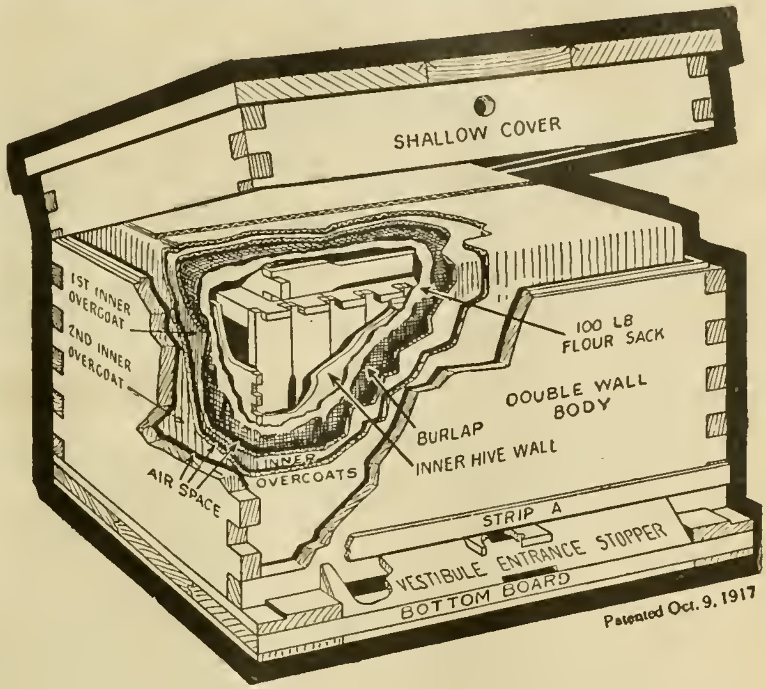
**AMERICAN BEE JOURNAL,**
**Hamilton, Illinois**

## WINTER PROBLEM SOLVED
—BY THE—
## HIVE WITH AN INNER OVERCOAT



**WINTER PROBLEM.** We have described to you in former issues of this Journal how to prepare bees for wintering in the above hive. The two Inner Coats, bottomless corrugated paper boxes, with intervening dead air spaces and inner covering or blankets, close up about the brood-nest is what does the trick. A person could have any amount of blankets fastened up on the walls of a room and still freeze to death if left in the center of the room without close-up protection or insulation, Many bees are packed for winter under different conditions, without actual close-up protection.

**AIR DRAINAGE.** In the selection of a location for wintering this should have careful consideration. A dry elevation, one free from fog and moisture, as found on lowlands, should be avoided as much as possible. We have found that bees wintered on the top of a building or highland, such as a peach orchard location, winter nice and dry, while those near a swamp in a sheltered location, which would seem much the best, had a considerable amount of moisture.

Order sample shipment of these hives to try out the coming winter and be convinced of their efficiency and durability. You can easily set the frames with bees out of other hives into these. Catalog and special circulars sent on request.

**A. G. WOODMAN CO.**
**GRAND RAPIDS, MICH., U. S. A.**

"GRIGGS SAVES YOU FREIGHT"

**TOLEDO**

## NOW FOR THE 1920 HONEY CROP We will buy it, both comb and extracted

We want especially White Orange, White Sage, White Clover, Basswood, Raspberry. Write us what you have, sending samples, and prices asked, in first letter.

**SECOND-HAND 60-Lb. CANS**

These cans used only once, packed in good cases. 10 cases, 70c; 50 to 100 cases, 65c; 100 to 500, 60c.

**BEESWAX WANTED**

**GRIGGS BROTHERS CO., TOLEDO, OHIO** DEPT. 24

' GRIGGS SAVES YOU FREIGHT"

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**QUEENS** **PACKAGE BEES** **QUEENS**

ORDERS are coming in daily for 1921 SHIPPING

My FREE Circular gives prices, etc., in detail. Safe delivery GUARANTEED. We ship thousands of pounds all over the United States and Canada.

Our Fall flow is very favorable for Queen rearing up to about Christmas. So we can furnish you queens the balance of this year at the following prices:

| | 1 | 6 | 12 | 50 | 100 |
|---|---|---|---|---|---|
| Untested Queens | $1.50 | $7.50 | $13.50 | $48.00 | $95.00 |
| Select Untested Queens | 1.65 | 8.25 | 14.85 | 52.80 | 104.50 |
| Tested Queens | 2.50 | 13.50 | 27.00 | 110.00 | |
| Select Tested Queens | 3.00 | 16.30 | | | |

**NUECES COUNTY APIARIES,** E. B. AULT, Prop. **CALALLEN, TEXAS**

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## He's Worth It—

THERE are thousands like him, rich and poor—helpless children struggling against the savage onslaughts of tuberculosis. Will you help him to victory?

**Buy Use Tuberculosis Christmas Seals**

Every Christmas Seal you buy strengthens your local, state and national tuberculosis associations in their fight against a preventable and curable disease.

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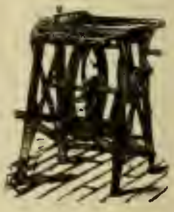

Read what J. E. Paren, of Chariton, N. Y., says: "We cut with one of your Combined Machines last winter 50 chaff hives with 7-in. cap, 100 honey-racks, 500 frames and a great deal of other work. This winter we have a double amount of hives, etc., to make with this saw. It will do all you say of it." Catalog and price list free.

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**995 Ruby St., ROCKFORD, ILLINOIS**

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## BEST GOLDEN ITALIANS

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From the first year of sale of **Dadant's Foundation** the Dadant firm had at least three hundred colonies of bees.

The tests for satisfactory foundation were made with their own bees, their aim being to manufacture and sell only such goods as would be satisfactory to their own bees, in their own apiary.

Every square inch equal to sample in every respect was the aim, and it was done at all times as thousands can testify who have used these goods. Not satisfied with the mills they were using, they tried different workmen until they got a mill that would make a foundation without "Fishbone," as the beekeeper called it; and also got mills that would make foundation of different weights from five square feet to the pound for brood to thirteen square feet for sections.

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Now the Dadant Apiaries have increased to nearly a thousand colonies in ten apiaries. The different locations give a chance for tests in heavy flows, in light flows, in a dearth, for fall crop, for spring. All, so that the proper tests can be made, and only the most satisfactory foundation sent out to the many customers.

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*Catalog and Prices on Bee Supplies, Beeswax, Wax Working into Comb Foundation and Comb Rendering for the asking*

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BEWARE is the motto of Lewis workmen
It demands first grade pine lumber
Rigid lumber choice begins at the cars
It continues until the goods are shipped
That is the duty we owe to every beekeeper
Look for this trademark on quality goods
With us it's BEWARE. With you—"BEEWARE"

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AMERICAN BEE JOURNAL

VOL. LX—NO. 11 HAMILTON, ILL., NOVEMBER, 1920 MONTHLY, $1.50 A YEAR

# BEEKEEPING IN SUNNY TENNESSEE

## Notes on a Trip Through a State Far-Famed for its Great Diversity of Products and for the Hospitality of its People

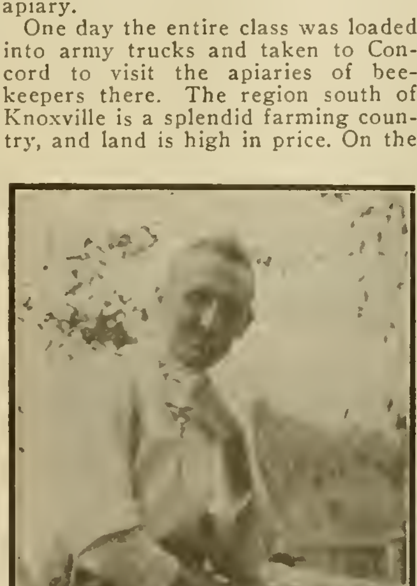
BY FRANK C. PELLETT

PERHAPS no one of the States has received more praise in song and story, outside its own borders, than has Tennessee. It is doubtful, also, whether in any other we can find so many advantages common to both North and South, as in Tennessee. Iowa and Illinois boast loudly of the great crops of corn, so likewise does Tennessee. Mississippi and Alabama proclaim to the world the excellence of their cotton. So, also, does Tennessee.

It was during the last week of August that the writer, in company with Prof. H. F. Wilson, of the University of Wisconsin, enjoyed a tour among the beekeepers of the States of Tennessee and Mississippi. The trip was arranged by that prince of good fellows, Prof. G. M. Bentley, State Entomologist. On our arrival at Knoxville we were surprised to find that Bentley had a class of sixty-seven returned soldiers taking a course in beekeeping at the University. A number of these men are serious in their intentions, and expect to make beekeeping an exclusive business. It is surprising what a great interest is being developed in the business of honey production at the various agricultural colleges. The boys leave the classes with the idea that beekeeping is a business worthy the attention of a full-sized, red-blooded man, rather than a fad suited to old men and boys. Bentley gives the boys as much contact with beekeeping outside the college apiary as possible. On the first day of our visit a trip was made to Jellico, to visit the queen-rearing yards of Curd Walker. Although Walker lives just across the line, in Kentucky, his postoffice is in Tennessee, so the beemen of both States claim him.

Walker is located in the Cumberland mountains, where sourwood is an important source of nectar. There are a number of honey plants in the mountain region which are not common to the lower levels. Among them may be mentioned the buckthorn (**Rhamnus caroliniana**), which is a valuable shrub wherever found. It is closely related to the Cascara Sagrada or Chittim of the Pacific Northwest. Northern Tennessee is a good apple-growing section and everybody enjoyed the ripe apples which were just then falling from the trees in the apiary.

One day the entire class was loaded into army trucks and taken to Concord to visit the apiaries of beekeepers there. The region south of Knoxville is a splendid farming country, and land is high in price. On the return trip the visitors taunted Prof. Bentley with the statement that all the watermelons must be shipped down from Illinois. Of course the professor could not stand any such insinuation as that and it was not long until they were treated with all the melons they could eat. After that, everywhere we went, we had to stop and eat watermelons until we had to confess that they raised bigger and better melons in Tennessee than anywhere else.



Curd Walker at home

Four days were spent in this way, driving from place to place with the boys who were taking the beekeeping course at the University. They were delightful days and everybody seemed to enjoy them immensely. We then spent a night on the sleeper, riding across the mountains to Nashville, and down to the little town of Spring Hill, in middle Tennessee, where the famous Davis queen yards are located. Prof. Bentley and his assistant, John Tillery, and Hamilton Steele, who has charge of the bee-yard at the University, accompanied the visitors, as did also several of the students. Only a very short time could be spent at the Davis home, owing to the necessity of getting across to Dyersburg for a meeting the following day. It is about 500 miles across the State in a straight line from northeast to southwest. Until one has traveled over the State one can hardly realize how big it is, or what a great variety of conditions are to be found within its borders. Although it was getting rather late in the season, we found everybody at Spring Hill very busy in an endeavor to catch up with orders. All the queen breeders had to return more orders unfilled the past season than they were able to fill. An unprecedented demand for queens and an unfavorable season swamped the breeders with orders and corespondence. After working all of the hours of daylight in the apiary, they sometimes had to sit up until midnight answering letters, and even then found it difficult to keep up with correspondence.

Bentley's class in beekeeping getting first-hand instruction in the apiary

Dyersburg is in the northwestern part of the State, and there we found quite different conditions. Between Nashville and Dyersburg we crossed a high ridge of very poor, gravelly soil, like some portions of the Ozark region. Along the western border of the State the land, for the most part, is quite fertile. A very good meeting was held there, in spite of a rain, and a goodly portion of those present were members of the girls' clubs, which are under direction of Miss McPhee, the demonstration agent. The last meeting was held at Memphis, in the southwest corner of the State. Here the party was made up of beekeepers from Mississippi, as well as Tennessee, and the whole crowd took a hike into Arkansas to see a little apiary in the cotton fields of the Mississippi River bottoms. The bottoms are covered with a luxuriant growth of vines of great variety, in addition to gums and the usual heartsease and Spanish needles. There, for the first time, the writer saw the climbing boneset, which grows luxuriantly over fallen logs, fences, etc. The blossoms are very similar to the other bonesets, and the bees were working them freely. We later found the climbing boneset common in lowlands across the northern part of the State of Mississippi.

**Sourwood**

The sourwood tree is worthy of more than passing notice. So much has been written about the quality of its honey and the quantity of the yield from this source, that beekeepers living in other regions may well wish to become more familiar with it. The botanical works give its range as from southern Pennsylvania and Maryland to Florida, and west to Indiana and Louisiana. While the tree may be found in this large region, it is seldom heard of as an important source of nectar except in the higher regions of Tennessee and the Carolinas. It reaches a much larger growth on the highlands than in the river bottoms.

The numerous small white flowers in terminal racemes give rise to the name "Lily-of-the-Valley tree," in some localities. Since the tree is sometimes planted for ornament as far north as Massachusetts, it would seem that beekeepers generally might do well to introduce it into new localities for lawn and street planting and for parks, cemeteries, etc.

Sourwood honey is regarded by many people as the finest flavored honey produced in America. Although it is produced in enormous quantity in some sections, it is seldom found on the markets outside the region where it originates. This is due to the fact that local markets pay a premium of a few cents per pound over prices generally prevailing for white honey, to get it. It is thus nearly all consumed near where it is produced. It is said to be one of the most dependable sources of nectar, and in regions where sourwood forests abound, the beekeeper rarely misses a harvest. The honey is light in color, of heavy body, and is slow to granulate.

Memphis beekeepers resting under a bridge after a hike into Arkansas. Tne pickaninies were there when the beekeepers arrived.

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## THE AMERICAN HONEY PRODUCERS' LEAGUE

By Colin P. Campbell

Section 2 of the Constitution of the American Honey Producers' League provides: "The object of this organization shall be the furtherance of the interests, activities and rights of beekeepers, in all lines, and in any manner, not inconsistent with public policy."

Under this broad power the League proposes to promote better methods and systems of marketing, by aiding co-operation wherever possible, and by standardizing containers and the grading of honey. The League also proposes to assist local organizations of beekeepers, in providing speakers for meetings, and in promoting the organization of beekeepers' societies, where active organizations are not in existence. Along with this it is the intention of the founders of the League to co-operate with the State and National departments of agriculture in research and experiment, and to promote instruction in beekeeping in agricultural colleges. In addition to these things, it is the League's intention to protect beekeepers so far as possible in the matter of the purchase of supplies, queens and package bees, and in the sale of honey and wax, by investigating and exposing fraudulent dealers, and by providing committees of arbitration to adjust disputes concerning prices, grades, and the like. Along this same line the League proposes to undertake, by the offering of rewards and the posting of signs, to assist in the protection of outyards from trespassers and thieves, and to aid members in resisting unjust and discriminatory city and village ordinances, and in the collection of claims for loss by the negligence of common carriers. Efforts will also be made to secure uniformity in legislation designed to assist the eradication of bee diseases and to obtain federal legislation governing the transportation of bees and bee products, so as to interfere as little as possible with the free transportation of such things, but at the same time adequately protect against the spread of disease. It is also possible under the constitution for the League to put in force some form of reciprocal insurance, regulating the care of bee yards, and in return therefor insuring against fire, disease, and even crop failure.

In short, the founders of the League propose to make it effective in service to the beekeepers along all practical lines, wherever and whenever they need assistance, in any matter consistent with public policy and good government.

Michigan.

## THE AMERICAN HONEY PRODUCERS' LEAGUE

By E. G. LeStourgeon

It is the intention of the American Honey Producers' League to establish a central office under the charge of a salaried Executive Secretary to act as a central clearing house for beekeepers and beekeeping information.

The League expects to function through five or more main committees or bureaus.

A Bureau of Education, to have charge of and foster State and National extension work, greater knowledge of disease control measures, the establishment of agricultural courses of study in the various State agricultural colleges and the dissemination of information looking toward the development of beekeeping in general.

A Bureau of Equipment, to serve beekeepers everywhere in securing equipment, in ensuring the purchaser of queens and bees of a standard for the various races, to determine by standardization exactly what constitutes a nucleus, a colony, a pound package, etc; to attempt, as far as possible, the standardization of equipment and containers, eliminating as much as practicable the duplication of effort and the countless number of useless appliances.

A Bureau of Legislation, to have charge of matters pertaining to State and National appropriations affecting apiculture, the making of uniform pure food laws, inspection laws, and quarantine regulations. The various conflicting State laws on the subject of inspection call for an effort to have them co-related, especially as regards interstate matters.

A Bureau of Marketing, to have supervision of all questions affecting honey markets. It is the intention to provide, as soon as funds permit, for the national advertising of honey, to establish uniform grading and packing rules, to collect information from the various honey-producing centers concerning the extent of the possible honey crop, the amount of surplus on hand and the demands of the consuming centers; to assist beekeepers everywhere in the distribution of their product and to help the larger beekeeping exchanges and co-operative associations in preventing overstock of the honey in certain markets.

A Bureau of Legal Aid, to give legal assistance and advice to beekeepers in questions concerning their interest; to handle transportation and other claims for members, to combat illegal ordinances, to act as a board of arbitration between beekeepers having disputes with one another, and to appear before rate-making bodies and classification committees when questions affecting our industry are under advisement.

These projects are all well worth while, and as the benefits of the national co-operative spirit becomes better appreciated, they will broaden out into a movement of inestimable advantage to the entire beekeeping fraternity.

Texas.

## THE SUGAR BUGABOO

By A. F. Bonney.

It would appear that it is about time to drop sugar when talking about honey, for it is doubtful if the price of our product is affected by that of the other. The writer is young in the honey game, but has lived to see honey sold at about the same price as sugar, for twice that, and now many are getting two to three times as much for honey as sugar is selling for.

The producer of maple syrup and sugar seems to pay no attention to the beet and cane product, and is getting as much for his sweet as we are for ours, and it is not nearly as good as honey; still there be those whose perverted taste calls for the condensed sap, and will pay the price asked.

When customers go into a store and ask for jam, marmalade or fruit butter, they do not consider sugar. They want what an acquired taste calls for, take it and pay the price. It is the same with honey. If they did not relish it, and want it, and have the price, they could not be induced to buy it, no matter what the cost, which is an argument in favor of popularizing honey. Induce people to eat it. Advertise it. Give samples to your neighbors, and in time they will get the honey habit and the demand for our product will increase rapidly.

Let us cut out this talk about sugar going up or down. Honey is a delicious food product and in a class all by itself. There is nothing that compares with it. It cannot be imitated. The demand is increasing rapidly and will continue to increase. The production is also increasing, and as many more persons are starting in the production of this sweet, it would seem that honey will again take the place it held before cheap sugar came on the market.

Iowa.

## TRANSATLANTIC GOOD WISHES

The President of the Beekeepers' Association of Rhone and Durance, France, forwarded the following resolution to us, dated July last:

"At the anniversary of your independence, the members of the Association of Beekeepers of Rhone and Durance forward to the beekeepers of America a cordial and friendly greeting.

"We will not forget that at the dark hours of the great war, the brave American soldiers fought heroically with ours against the invaders.

"The simple and noble words of your General, when he landed in France: 'Lafayette, we are here,' have reached the heart of every Frenchman.

"The beekeepers of Rhone and Durance send their wishes of happiness and prosperity to their brothers of the United States. Long live America!

R. BOUVIER, President."

The far-famed sourwood which is the source of the finest honey in Tennessee and the Carolinas

AMERICAN BEE JOURNAL
Established by Samuel Wagner in 1861

The oldest Bee Journal in the English language.
**Published Monthly at Hamilton, Illinois.**

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THE STAFF
C. P. Dadant ........ Editor
Frank C. Pellett ........ Associate Editor
Maurice G. Dadant ........ Business Manager

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# THE EDITOR'S VIEWPOINT

### Two Queens in one Hive

The finding of two queens in one hive comes more and more into notice. We are in receipt of a letter from Mrs. W. F. Laraway, of Fairhope, Ala., which recounts a similar experience with two different hives.

### Food for Young Queens

Mr.Y. H. Benton, in the New Zealand Beekeepers' Journal for August, describes the Benton Nursery Incubator. Concerning the question whether young queens develop properly when fed entirely on candy, he says:

"My experimental tests prove conclusively that queens reared under conditions which make communication with the bees impossible, and fed on candy only until introduced, are the equal of those reared under any other conditions; and I challenge any beekeeper to prove that this is not so. The proof of the pudding is in the eating." On page 382 of this number Mr. Jay Smith has something to say on the matter.

### Honey for Explosives

How many of our readers know that honey was in great demand in Europe during the war because it was used in the place of glycerine to make nitro-glycerine and other explosives.

So we may reverse the riddle of Samson, "Out of the strong came forth sweetness," and say "Out of sweetness came forth strength."

### Homing Instinct in Drones

The Western Honey Bee for September contains an interesting statement by "W. R. M.," telling of a beekeeper moving bees away and the farmer putting an empty hive where the colonies had stood. The next day he was much astonished to find a swarm of drones, and drones only, in that hive. The writer of the letter wonders how much farther drones can find their way back than can the workers. They had no information as to how far those bees were moved.

I have noticed several times that Italian drones will mate with black queens several miles from home. The drones are much stronger on the wing than the workers or the queens, and this seems to prove it. Those drones had probably traveled over the distance before those bees were moved, so they could find their way back when the workers could not.

### Foreign Quotations

We understand that some of our readers object to our giving quotations from foreign bee magazines, because this is the "American Bee Journal." But do they forget that some of the best inventions for beekeeping, of modern times, were made in foreign countries? Witness the honey extractor and comb foundation.

Co-operation is looming up, not only in this country, but elsewhere. Italy has two associations, New Zealand has another, of co-operative honey producers.

### Smaller Bees

In the March number of L'Apicoltore, now published at Gallina, Calabria, by the erudite apiarist, Vincenzo Asprea, an article is published, written by Riccardo Ricci, discussing the size of queens and that of workers.

Mr. Ricci asks: Does the richness and abundance of the food which the colony has in reserve or which it is harvesting have any effect upon the size of the bees? He answers in the affirmative, asserting that the food supplied to the larva in greater or less quantity and of better or poorer quality has an influence upon its growth. His deductions are that in order to have strong, healthy bees, they must be abundantly supplied with food.

### Wisconsin Beekeepers

The "Wisconsin Horticulture" number for August gives a list of 18 Wisconsin counties having local associations of beekeepers, numbering in all 559 members. It would seem that Wisconsin, like several of our most progressive States, is ready for a honey producers' league. The State Convention of beekeepers is called for December 1, 2 and 3. Write to H. F. Wilson, Secretary, Madison.

Aristotle wrote that "bees do not breathe." That man lived some 300 years before Christ. But we have men who write as incorrect statements without the excuse that we can find for Aristotle, who lived at a time of ignorance, and who really helped human knowledge on many points.

### Rheumatisms and Beestings

The poison of the bee is generally recognized as a cure for rheumatism. But there are all sorts of rheumatism, or rather a great variety of causes. That is probably why some cases are not cured, not even ameliorated, by the use of stings. So it is gratifying to read the following, in the "Bulletin de la Societe Romande," of Switzerland:

"According to certain people, the stings of honeybees constitute an excellent treatment for rheumatism. Doctor Lee, of Austria, employs this curative method on a large scale. He has treated 163 patients with 39,000 stings, the results of which, it appears, have always proven a cure. The stings would appear to be less painful to sufferers of rheumatism than to healthy people." Chas. R. Ducrest, May 29, 1920.

### Erroneous Statements

False information is easily acquired most innocently. The publisher of the "Gazette Apicole," in Montfavet, Vaucluse, France, announces to his readers, for Christmas, a treat in the reproduction of several articles on bees by well-known authors, such as Michelet, Tolstoi, Rostand, etc., among whom he mentions C. P. Dadant as the inventor of the movable-frame hive. We inform our contemporary publisher that it was Langstroth who invented the modern, practical, movable-frame hive, and that C. P. Dadant cannot claim the honor of even inventing the Dadant hive, as it was simply a modification and enlargement of the Quinby hive, which was itself a copy of the Langstroth idea of movable frames. There were other movable frames before Langstroth made his invention, but they lacked the practical points of a bee-space between the frames and the hive and the open top for removal of the combs. Honor to whom honor is due.

### Italian Beekeepers' National Meeting at Trieste

The progressive beekeepers of Italy, meeting in a national congress at Trieste, in the now-redeemed "Italia Irredenta," had a very enthusiastic meeting. A bronze memorial plate was presented by them to the City of Trieste, celebrating the return of that city to the mother country. Messrs. Cotini, Carlini, Bovelacci, Capponi, Ambrosol, Piana and Oreggia, nearly all of whom are known to American readers, joined in addressing a complimentary postal card to our editor.

### Printers' Mistakes

On page 381 of this issue, the heading "Two Queens in One Cell' should read "Two Queens in One Hive." That was in print before we secured the last proof of the reading pages.

### Dr. Miller's Last Answers

In the questions department will be found the last answers which Dr. Miller wrote. Some of these were still in his typewriter when he passed away. Dr. Miller was a contributor to American Bee Journal for fifty years. It is our purpose to review at length his connection with this Journal in our January issue, which will be our sixtieth anniversary number.

### Good Samaritan Fund

| | |
|---|---|
| Credit— | |
| By balance Sept. 1 | $139.00 |
| Received for queens: | |
| C. S. Saunders | 15.00 |
| American Bee Journal | 15.00 |
| Ben G. Davis | 44.00 |
| Ben G. Davis | 11.00 |
| A. E. Crandall | 15.00 |
| H. S. Foster | 31.25 |
| Jay Smith | 22.80 |
| Allen Latham | 21.00 |
| J. M. Davis (half for each country) | 54.00 |
| J. W. Stine | 3.75 |
| Cash, J. N. Demuth, N. Y. | 2.00 |
| Total | $373.80 |
| Debit— | |
| Smokers sent to France | $ 57.12 |
| Transportation | 4.16 |
| Draft to Belgium, Aug. 27 | 150.00 |
| Draft to France, Sept. 9 | 71.58 |
| Draft to Belgium, Sept. 9 | 49.30 |
| Smokers to Belgium, and parcel post | 41.64 |
| Total | $373.80 |

We have not yet stated that, by mutual agreement, the French and Belgian committee divided the funds in 3 parts, 2 for France, 1 for Belgium. It was so divided in the above remittances, except that the subscription of J. M. Davis was, at his request, divided equally between the two countries.

Later.—Since closing the account we have received the following:

I. J. Clinton, Torrington, Conn., $1.00.
W. S. Carrico, Florissant, Mo., $5.00.

The subscription list is therefore again reopened. We know more people will want to subscribe, especially where they have had a fair crop and good prices. America is thriving and still willing to help.

### Cleaning Out Honey From Extracted Supers

When we put extracting supers back on the hives for the bees to clean of the sticky honey, at the end of the season, we find that, in many cases, strong colonies store a little honey in those supers. Then a cluster may remain with the honey and it is an unpleasant job to shake or brush them out, later, when removing those supers for winter. If they are left upon the hive, the bees may be unable to go down to the brood-chamber when cool weather comes, and do not have enough stores in those upper stories to carry them through the winter. In such cases we have known them to starve, with the main cluster and plenty of honey a few inches below them.

A very good way to prevent this is to place those supers under the brood-chamber for a while, after the bees have cleaned them. If the colony is very strong they may even be placed under the brood-chamber at once, in the evening after extracting the honey. But colonies of only average strength may not be able to defend such supers against robbers, when they are fresh extracted, because of the strong odor of honey which emanates from them.

Bees rarely, if ever, allow honey to remain between the entrance and the brood-chamber. They want their honey where they can defend it, above their cluster, where pilferers have to pass through a host and give the countersign before they are allowed to proceed. Hence no honey is left by them below the cluster.

Some beekeepers prefer to have the supers cleaned out by the bees, by exposing them, out-of-doors, where the bees can reach them. We do not like that practice. It causes more or less uproar, teaches the bees to rob, and often feeds neighboring colonies which do not belong to us. We believe in being neighborly, but not in that way.

Many beekeepers who have had experience with American foulbrood, prefer t return to each colony its own supers to clean, even when they do not know of any disease in any of their colonies. They feel that, in case any germs should be lurking about the supers of a colony, unknown to the owner, it is safer to return the combs of each colony to its own bees and not increase the danger of contamination. This is, of course, advisable only in an apiary where disease has been discovered at some time or other.

### Do Bees Hear?

Among the things which we **don't know** as yet positively, is whether bees hear, and how. Most of us are of the opinion that they do hear. Anything that may be brought about, throwing a little light on the subject, is worth while. That is why we insert in this number an article clipped from the Literary Digest on "How Butterflies Hear."

### The American Honey Producers' League

Great encouragement was given to the League at the July meeting of the Michigan State Beekeepers' Association, at Boyne City, in July last. Michigan is one of the most progressive States anyhow. But the League has wonderfully capable supporters, and any one who heard that eloquent speaker, Colin P. Campbell, explain the possible advantages of such a union, was sure to support it. We were enthused ourselves, and, in order to give in a concise manner a list of the most useful features that will be secured from the League, when it is well established, with the universal support of the different States, we asked Mr. Campbell to write them down for publication. Then we asked a similar statement from the President of the League, Mr. LeStourgeon. The two statements are published in this issue. Although some of the points in one statement are repeated in the other, both are short enough that every reader may read them through and the repetitions will serve to emphasize the salient points covering the benefits to accrue to the American beekeeping public when the League is thoroughly established and universally sustained by the Beekeepers' Associations of the different States of the Union. This will probably not be achieved within one or two years. But it is in the future, without doubt, for we may say of the beekeeping interests what is said of the American Union: United we stand; divided we fall! Let us hasten the day.

### False information

We are indebted to a friend in the East for a copy of the "Philadelphia Inquirer" of August 15, which contains an article on bees and honey production.

It says that the vicinity of National Park, N. J., is developing as a honey center, owing to the numerous sugar-laden ships which pass up the Delaware river and the refineries on the Pennsylvania side, which the bees raid in large numbers. The article gives the impression that bees make a great harvest from those ships. What we have seen, of candy stores and confectionery shops, gives us the impression that the bees in the vicinity of those ships have more to lose than to gain. Probably an occasional colony may make a find and gather a few pounds of stores from such sources. But there are usually more bees lost than gains made in raids of this kind.

The article also states that "Crooks have discovered that stealing bees is profitable. If they can capture a queen bee they know the entire colony will follow them. Several losses have been experienced by beemen through the operation of bee thieves."

It is unnecessary to quote further. If the information first given is not any more reliable than this passage, it will serve only to lead people astray in beekeeping information. The man who wrote that evidently knew that a swarm will return to the hive if the queen is not with them. From that he deducted the statement that a colony will leave its hive and follow the man who takes away its queen. Practical beekeepers know that this is absolutely incorrect.

In the same mail came another newspaper clipping, stating that the Morales Bros., at 623 West 207th street, New York City, keep 20 million bees in 30 colonies, in the upper story of their home; with other impossible features, such as "how many quarts of honey the bees lay during the night." Why do our newspapers take pleasure in misinforming the public? If the foreign news and the political information are as distorted as the information which relates to our industry (and it is very likely), how can the public discern the truth?

## WINTERING BEES IN MONTANA

### How B. F. Smith, Jr., Prevents Serious Winter Losses

By Kennith Hawkins

Despite the low temperatures of the wind-swept Northwest in winter, B. F. Smith, Jr., one of the most successful producers of comb honey in Montana, has worked out a plan of applying winter protection to his bees which has reduced losses to one per cent or less over a period of 6 years. The methods adopted by Mr. Smith might not work in other than the "dry" climates of the inter-mountain States, but have been proven successful on apiaries aggregating a total of 600 colonies of bees. These experiments have been continued since 1914, being applied the first winter to 320 colonies of bees. For the winter of 1919-1920 the methods were used on 600 colonies of bees, with excellent success.

The 10-frame hives containing bees are set into pairs by Mr. Smith, the covers removed and a 4-inch tray placed over each hive, this tray having a bottom of cloth to prevent packing sifting down between the hive frames. The trays are filled with planer shavings and sawdust, loosely packed, and the inner covers set on top. Two thicknesses of paper are placed over the hives, the one next to the hives being a red rosin-sized building paper. Over this is placed one thickness of tar paper, and on top of the hive a thickness of tar paper is placed, all being secured in place with lath.

Since Mr. Smith operates entirely for comb honey, one might expect a little poorer wintering if consideration is given to the fact that in most comb-honey operations, the queens are restricted for room and consequently there might not be the quantity of young bees in the hive in fall that one might desire. However, the loss of one per cent of the bees annually in six years, indicates colonies in good condition in fall.

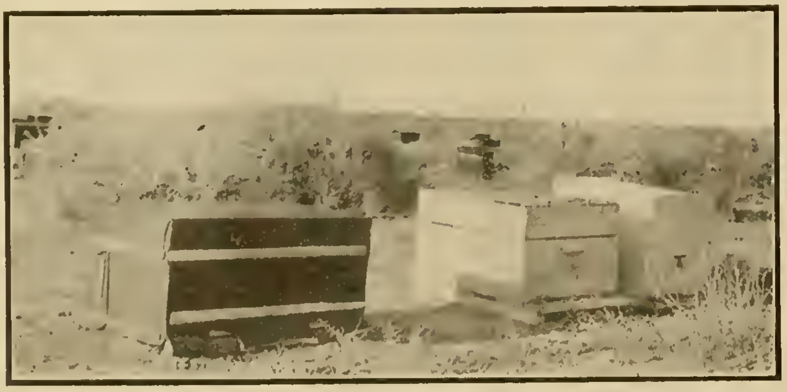
The packing material is fairly dry, will pack without too many air spaces between the particles. It is easily accessible in Montana. The packing is never put in tight, and being placed directly over the cluster, operates to some extent as an absorbent of moisture given off by the cluster. One thing of importance is that only a part of the apiaries included in this experiment have wind protection, and the difference in winter losses between those protected and those afforded no protection has been negligible, Mr. Smith says. Any one who doubts that heavy snows do not fall in Montana at times, in spite of the low rainfall in the State, may correct this impression by a glance at the accompanying photographs. The reader should remember that the experiment involves the use of some 600 colonies of bees.

B. F. Smith's bees winter well, in spite of Montana's severe winter climate

A study of the climatological peculiarities of Montana affords an interesting sidelight on this wintering plan. The average annual rainfall for the State at Bozeman from 1880 to 1910 was but 19.29 inches. Heaviest precipitation came in May and June, with fairly heavy average annual fall rains in September and October, over this entire period.

The average first killing frost, at Billings, near Mr. Smith, comes about September 10, and the last killing frost about May 2, according to reports of the Montana Experiment Station.

From weather reports, 1919 seems to have been an average season, so far as temperatures are concerned. U. S. Weather Bureau reports show that the mean growing temperature for April was 48.6 degrees F., for May 57.6 degrees, for June 69.2 degrees and for July 72.4 degrees. The mean minimum temperature, for Billings, over a period of 15 years, ranges 0 to 20.9 degrees F, in January; from -4.6 to 21 degrees F in February; from 15.7 degrees F to 27.4 degrees F in November and from 3.2 degrees F to 20.8 degrees F in December.



B. F. Smith fills the supers with absorbent material and wraps two colonies together in heavy paper

Mr. Smith succeeds in wintering succesfully in his climate by following the plans enumerated: Vigorous queens, plenty of young bees in fall, adequate stores, reduced entrances, supers removed, packing applied by shavings above the cluster and a double row of wrapping paper surrounding all colonies, rosin-sized paper within, tar paper without all, paper fastened to hives by nailed lath. Hives are 10-frame, set together for wrapping in pairs, covers are removed, inner cover topping off packed super above brood-chamber.

Best of all is the honey test, and those who are acquainted with Mr. Smith know that he ships many thousands of pounds of honey nearly every year. He is located in the Clark's Fork Valley, which is well stocked with bees now. There are many good locations in other parts of Montana and as Mr. Smith is too busy to answer correspondence, information can probably be gotten by addressing the State Entomologist Experiment Station, Bozeman, Montana.

## DR. MILLER'S MEMORY

Among the hundreds of letters commenting upon the death of our old friend, we will give only two, because they indicate the almost unanimous sentiment expressed. Here they are:

"Your letter received. I am at a loss to find words to express my feelings of sorrow to hear of Dr. Miller's death. I wonder who would say he could take his place!

"L. W. BENSON, Dewitt, Neb."

The other is from one of the men best acquainted with him, the man who called him the "Nestor of American Beekeeping."

"My Dear Mr. Dadant:

"Your letter of September 14, bearing the sad news of the death of our grand old friend, Dr. C. C. Miller, came today. I read it just as I got home from the office. Little did I think before I opened the envelope that it contained such sorrowful news.

"For many years Dr. Miller seemed more like a father to me than as an acquaintance and friend. He helped me so much during all the 20 years that I edited and published the American Bee Journal. It would not have been nearly so valuable as it was, for so many years, before you got it, had it not been for Dr. Miller's eagle eye and brilliant brain, as well as extensive apiarian experience. I am inclined to think that possibly I knew and understood Dr. Miller better than did anyone else connected with the beekeeping industry. We traveled together thousands of miles, day and night, attending beekeepers' conventions, from Buffalo on the east to Los Angeles on the west. He has been in my home many times and I have been in his home and with his family often. I feel his loss very deeply. It seems he filled a place in my life and thought that no other can ever take.

"There was only **one** Dr. C. C. Miller, the great beekeeper, and the greater man. And in bee literature no one can equal him. He was unique and so original. And as to the good influence of his long life, in every way you view it, who can measure it?

"But, Friend Dadant, you knew him, too, and I know you would lay a tribute of love and respect upon his grave, as would the thousands of beekeepers scattered all over this and other lands throughout the wide world.

"I am glad I was permitted to know Dr. Miller so intimately. He has blessed my life beyond my ability to express. He was as brave and courageous for the right as ever was a bee in defending its hive; he was as devoted and true and sweet in life as ever was honey pure and sweet; and for many years to come the beneficent influence of his long and useful life will be felt among the beekeepers of America and the rest of the world where bees ar: kept

"GEORGE W. YORK,
"Spokane, Wash."

## LAVENDER

We publish herewith an excellent photograph of Lavender (**Lavandula officinalis**), received from our good friend, Engineer A. Capponi, of San Remo, Italy. In an article written for the "Apicoltura Italiana" the past summer, Mr. Capponi praised highly this plant as "eminently nectariferous." It grows in arid soils, is very hardy, and could be easily acclimated in this country. We have seen occasional sprigs of it here. In the Riviera, it grows spontaneously on dry hillsides at an altitude of from 1,600 to 5,000 feet.

Whether this Labiate would prove as good for honey in this country as in western Italy is yet to be learned. But it has other uses. It is harvested to produce an essential oil—oil of lavender—used chiefly as a perfume, and, according to our friend, produces more and better oil after the flowers have passed their best period of bloom, so that both honey and perfume may be secured from it. It appears that the gathering of these lavender blossoms is very profitable in the mountains of Liguria. In many countries it is used to give a sweet odor to linen, and from this use came the expression "to lay in lavender," since linen is rendered sweet-smelling by placing upon it, in the clothes press, sprigs and blossoms of lavender.

## A NEW PEST

By R. A. Bray.

A new pest, a kind of thrips, has invaded Montana and not only ruined the seed crop of alfalfa and sweet clover, but cut the honey crop in half all over the State.

Professor Cooley, State Entomologist, says that the thing is evidently local, and that no data or information is available which may throw any light on the subject. This thing should be thoroughly investigated, as it is liable to spread, and as it injures the seed, it will in time extinguish the sweet clover, which re-seeds itself.

You can pick up a handful of alfalfa blossoms and shake them against a light-colored object and hundreds of tiny insects are at once dislodged, and may be seen crawling around.

This thing appeared without warning and stopped the honeyflow in a single day. Since August 1, the usual time for our big flow, the bees have barely fed themselves, although blossoms have never been more abundant or weather conditions better.

## CLIMBING MILKWEED

By L. H. Pammel

In your issue for October, Dr. Edward G. Baldwin has an article on a milkweed that climbs, which interests me very much. After a description of the plant, based on correspondence and published floras, the author gives the distribution from southwestern West Virginia and western Virginia through southern Ohio, Indiana and Illinois and south through central Georgia, west to central Texas. A few hours before reading the article I identified a specimen of this milkweed from Logan, Iowa. This is in Harrison County, due west of Ames, about 20 miles from Nebraska. I have received a good many specimens from Iowa corespondents during the past two years. We have one mounted specimen in the herbarium from Eddyville, on the Des Moines River, in southeastern Iowa. The other specimens I am unable to get at at the present, but as I recall, they came from southwestern Iowa, chiefly. It was reported as a troublesome weed in southwestern Iowa as early as 1912. I am unable to say whether the plant is a native or introduced. The fact that so many independent observers report it to me as a bad weed makes me hesitate about beekeepers introducing the plant. In my weed flora of Iowa I described it as a bad weed, and why increase our weeds when there are other good honey plants that are not injurious to the farmer?

I am inclined to think it may have been native in the extreme southern part of the State and that it is moving northward. At any rate, I know the plant was fairly common in parts of Missouri (St. Louis) thirty years ago. Drs. Robinson and Fernald, in Gray's Manual, gave its distribution as Pennsylvania, Illinois, Kansas and southward. Dr. Baldwin states that it needs dry weather to secure the maximum recreation. It is a rather deep-rooted perennial and this ac-accounts for the fact that dry weather will not diminish the secretion of nectar. Farmers have called it the "Dry Weather Vine."

Iowa.

## AN AID TO KEEPING BEES IN WINTER

By Geo. Kirkgasser

A Nebraska man who was engaged last year in the bee and honey industry, tells of how he kept 85 hives of Italian bees (worth over $1,000) during the entire winter in a concrete underground bee house or cellar. The heating of this cellar proved a great problem, not because of the amount of heat required, which is very small, but on account of the fact that the source of heat must not consume any oxygen, or it soon smothers the bees.

After trying, without success, other methods, he hit upon the idea of electric heat and made an electric stove 28 inches high by soldering two square 5-gallon tin kerosene cans together, end to end. The cans had

Blooming sprigs of lavender

their heads partly cut out and were provided with four porcelain knobs, such as are used in electric light wiring. These knobs served as feet at the bottom. Over the top a piece of quarter inch wire mesh screen was placed.

For heating purposes two Ch. flat type electric heating strips, about two feet long, were suspended from the top. Connection was made to the lighting circuit, since this type of steel-clad heater required together only 1,000 watts, or the equivalent of about ten 50-watt lamp bulbs. A snap switch was arranged to turn the current on and off. The heat circulated vertically from the floor up through the two cans and out at the top. The cost of each of these electric heater strips was $2.75, and the switch 65c, making a very cheap outfit.

Wisconsin.

## WHAT IS THE TROUBLE? WHO CAN TELL?

I have five colonies of bees placed out near town. Last year we took off the surplus honey and it was especially fine flavored. I put it in pails and didn't hurry about selling it. Later one pail was sold and the buyer brought it back and said I must have made a mistake and given her Karo. I examined the rest of the pails and they were all tainted with this Karo taste. I buried it.

This year I took off 110 pounds of honey from the same colonies, extracted it, and it was as fine as I ever tasted. This honey was removed in August. Last week one of the men who is working for me wanted to know where I got that pail of sorghum. I looked at the rest of the pails and they have all done the same as last year. There was foam on it, and there is a very distinct sorghum taste. Last year it tasted like Karo, but this year it was like sorghum, although perhaps it will arrive at the Karo stage later, providing I don't bury it. I was present when the honey was removed from the hive. The frames were all well capped, and this year I took special care to see that nothing was taken from those hives unless it was well capped. The flowers in that locality, as far as I know, have been white and yellow sweet clover and alfalfa.

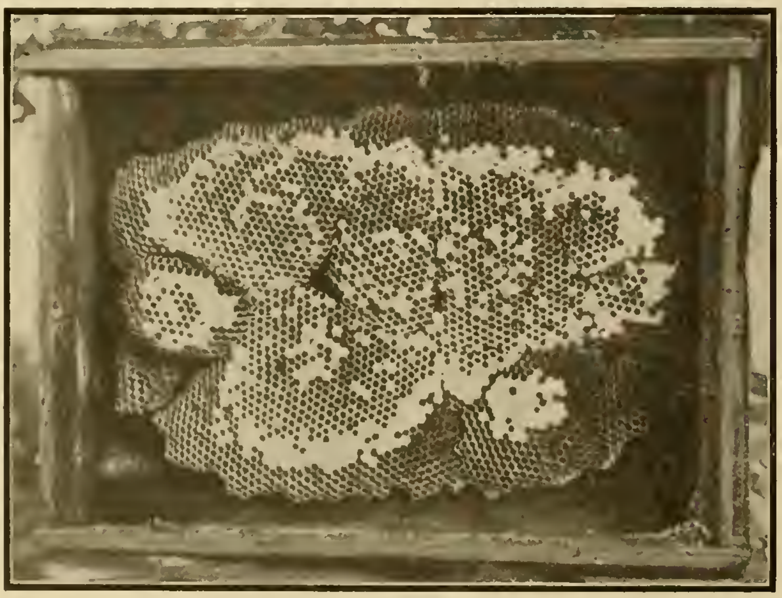
If I remember correctly in the "Answers" column of the American Bee Journal, mention was made of a ferment in honey which might live over from year to year. What can you tell me about this? I have 100 pounds of this honey and want to make some use of it. KANSAS.

We pass this question on to our readers and will be glad of an explanation of good white honey turning to sorghum or Karo.

## WASPS IN A BEEHIVE

By Frank C. Pellett

In the December, 1919, issue of this journal we published an account of a colony of yellow jackets which had occupied a beehive in the apiary of D. W. Spangler at Longmont, Colo. In that case the wasps occupied the body of the hive and made use of the regular hive entrance. On a recent visit to an apiary at Concord, Tenn., in company with Prof. Bentley and a party of beekeepers, the writer was much interested in a hive where a family of red wasps, identified by Prof. Bentley as **Vespa vulgaris,** had established themselves in the cover. It was a double cover with a space about 4 inches deep between the upper and lower boards. Evidently the wasps had been present for a long time, as the nest was much the largest, for this particular species, ever seen by any member of the party. One of the illustrations shows how fully it occupied the cover, being more than 15 inches in diameter the largest way. These wasps are commonly found nesting in empty hives in Texas and other southern States, and nests as large across as a tea plate are not uncommon. In this case the nest was placed under the cover of an occupied hive, and as the beekeeper removed the double cover intact in every case, he had no idea that such a large colony of wasps was present. It was the writer's curiosity to examine the nest closely that led to removing the lower portion of the cover, thus exposing the nest. The second picture shows a few of the wasps resting on their paper combs.


Nest of red wasps under a hive cover

## THE LARGE HIVES AGAIN

By C. P. Dadant

"Please tell us how to manage to handle your large hives? After working for years with eight-frame hives, the Dadant hive looks as big as a barn. In the usual system of management there are dozens of occasions for moving from place to place: when a swarm is hived, when the bees must be taken into the cellar or removed therefrom, when colonies are to be united, and similar operations which would require some lifting of the hives. Also please explain how such operations as uniting and other manipulations which usually require tiering up of hives, are accomplished with the Dadant hive."

Illinois.

Yes, the Dadant hive looks as big as a barn, to the people who are used to small hives like the 8-frame, but after comparing the crop of an 8-frame with that of a 10-frame Dadant, in the same locality, we are quite willing to put up with the barn.

"In the **usual** system of management there are dozens of occasions for moving the hive from place to place.' Yes, that is true. But the **usual** system is not ours.

"When a swarm is hived . . .' Well, we have very few swarms, and we don't handle one hive to your 10, Mr. 8-frame man.

"When the bees must be taken to the cellar . . ., we use a hand-barrow and carry two hives. It takes two men, it is true, but they carry them in this way with more ease than one man will carry an 8-frame hive alone.

"When colonies are to be united . . ." Remember that since we have larger colonies, we have less need of uniting. We do uniting when there are only 3 or 4 combs with bees in the cluster. On a cool day, this cluster is easily lifted out of its hive and carried to the other hive. We place it in the other hive, sometimes behind the division-board. There is usually room for it, as we unite only weak colonies. But if you want to use the newspaper plan, you need to carry only the brood-chamber of the weaker hive to the other, and with the Jumbo or the Modified Dadant body there is but little more weight than with a Langstroth standard 10-frame hive.

The making of divisions is one of the few operations in which there is any need of carrying hives about the apiary. We have never found it so objectionable that we would be willing to put up with a diminutive hive, for we find the results of the deeper and broader hive very superior to those of a small one.

When we have to haul bees back and forth from a locality of spring crop to another locality of fall flowers, that is when the greatest objection is found to the large hive. Yet, if the 8-frame hive man wishes to give his queens full scope, he needs to use two stories for brood, as Dr. Miller did. Then there is but little difference in the bulk of a colony, and we are certain that it is less trouble to transport one large brood-chamber than two small ones.

"When tiering up," we do **not** tier hive bodies. It is never necessary with our management. We tier up supers, just as every one does who harvests large crops.

It is now a trifle over 50 years since the Dadants adopted the large, deep frames of Quinby pattern. During that interval of time, we had occasion to use a large number of 10-frame hives of the shallow pattern or standard Langstroth, having, at one time, two apiaries in these hives. We also kept them side by side, and concluded, years ago, that there is no comparison between them.

Not long ago, I read somewhere the criticism of a beekeeper who stated that queens became aged more quickly in large hives than in small ones, because they laid more eggs in the same length of time. Well, that is just what we want, as many eggs as possible, at the right time, when making ready for the crop. We replace the queens as often as necessary, but not so often as some of our friends would have us do. I have never yet become convinced that a good queen could not give a two-season service, efficiently, in our large hives.

But why not use a 13-frame Langstroth depth hive, instead of the deeper hives with a less number of frames? Because the deeper frames supply more honey in the combs, **above** the cluster, in winter, all other conditions being equal. It places the bees in better position, since they are spread over a less number of spaces and undoubtedly secure better wintering, as we have proven to our satisfaction by comparative tests, side by side.

Understand, now, that we do not urge anyone to change his colonies from Langstroth depth to Quinby-Dadant depth of hive,for we know by experience how annoying it is to make a change. We simply answer questions asked and objections, by explaining how it happens that three generations of Dadants have succeeded with deep frame hives, in a locality where very few beekeepers appear to succeed.

But let no one expect extraordinary results. In the British Bee Journal for August 26, page 412, J. M. Ellis writes: "I had the Dadant-Quinby brood-frames in use many years ago, but although noted for **production of enormous populations,** results were not **always** satisfactory." (Emphasized words ours). Well, we can say the same. We do not **always** have large crops. We do not **always** prevent swarming. We do not **always** have prolific queens. We do not **always** have safe wintering. But we **always** have larger crops, less swarming, better wintering, with the deeper frames than with the shallow frames, and that is due—as we keep repeating to any enquirer—to the more comfortable position of the cluster and to the "production of enormous populations." It is for us to manage so as to have these enormous populations, **for the crop, and not after the crop.**

During the summer just past, I had occasion to visit the apiary of a very efficient honey producer who has all his bees in 8-frame hives. I was highly pleased with his system, admired it and told him so. His answer was, as nearly as I can remember, in the following words:

"Yes, sir, I have a very good system; but there is so much work about it that I do not believe I can continue it, with the number of colonies I have, about 300, when I get a little older and less able to stand the strain. For that reason I am planning to change to your system, which attains similar results with much less labor."

## FINDING THE QUEEN

By Frank Van Haltern

Requeening hives or boxes containing crooked combs is often a hard problem. Beekeepers sometimes requeen their neighbor's bees with Italian stock in order to be sure of pure matings of their own queens. It sometimes happens, also, that beekeepers owning hives with crooked combs wish to requeen without destroying the combs. Finding the old queen is usually the greatest drawback in requeening such hives.

An easy method of finding the queen, that works nicely for me, is as follows: First remove the top of the hive, then, if the bottom can be removed, raise the front of the body a few inches from the bottom. Have a good smoke going in the smoker and drive the bees upward by smoking the under side of the brood-nest. Do not smoke on top of the combs. If the bottom cannot be removed, make the entrance as large as possible, so as to get the smoke well to the back of the hive. Hybrid and black bees are very nervous and will boil up on top of the frames, and the queen will come up with them. As soon as she appears, catch and kill her. The new queen in her cage may be given immediately after killing the old one.

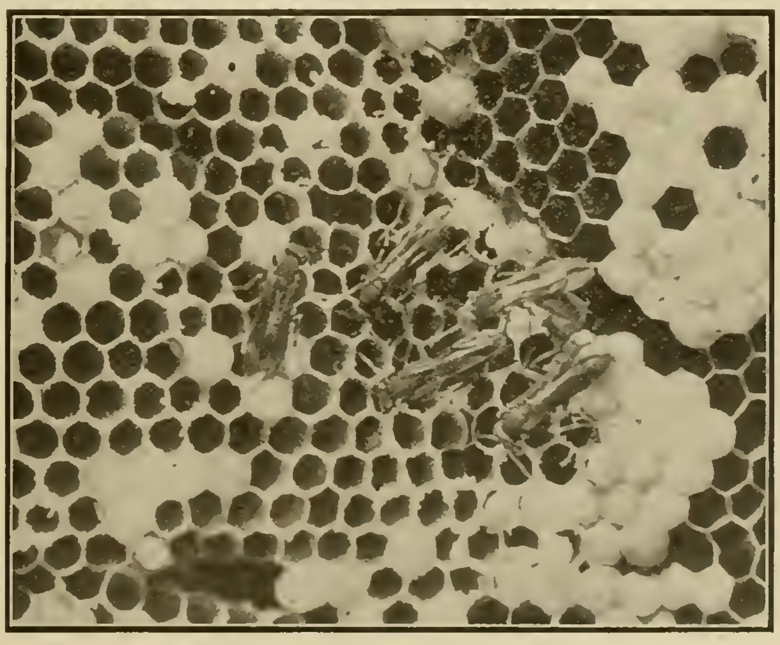
Care should be used in smoking, for if too much smoke is used the bees may come up so fast that the queen will not be seen, and if too little is used they may not come up at all. If much honey is broken on top of the combs in removing the hive top, this method may not succeed, on account of getting the bees smeared with honey.

Kansas.

## HOW BUTTERFLIES HEAR

(From Literary Digest of Aug. 14.)

In recent years numerous interesting experiments have been made with regard to the sensory organs of insects. In the latest volume, No. 41, of The Zoological Year Book (in German), published in Berlin, there are reported the results of an extremely extensive study made by Mr. F. Eggers, concerning the organs of hearing of some of the butterflies, the spiders, and the moths. These possess certain structures in the last ring of the thorax which have hitherto escaped notice, and whose true significance has been ignored. It now appears that this structure is a so-called tympanal organ, similar to that possessed by crickets and grasshoppers, but much more delicately constructed. The essential part of this organ is an air-filled trachean vesicle or "bladder" (such as is possessed by many winged insects and by some butterflies), which lies very close to two extremely thin portions of the external covering of chitin;



The red wasps resting on their paper comb these two attenuated portions of the chitin are known as the true drumhead and the opposite drumhead. The "true drumhead is so called because it is connected with the delicate nervous apparatus designed to receive the vibrations of sound waves; the opposite drumhead is not thus provided and probably acts merely as a sounding-board to reenforce the vibrations. The nerve apparatus itself consists of a strand of connected cells attached to the elastically vibrating drumhead; this strand of cells contains two sensory cells whose most delicate projections end in a so-called "peg," which is characteristic of what is known as chordo-tonal organs.

That the insect distinguishes sounds through the tympanal organ has been satisfactorily proved by experiments with crickets, since it has been found that the well-known chirping sound uttered by the male attracts only those females in possession of this organ whereas, when it was destroyed, the female was incapable of perceiving the ardent serenade of the would-be wooer. It is reasonable to conclude that the very similar but more delicate organ in butterflies has a similar function, though we cannot test the matter in the same manner, but it seems certain that many butterflies are affected by high, shrill tones, such as that made by tne rubbing of a cork against a wet glass, and that in the Endrosa aurita the female answers a clattering sound made by the male with a fluttering motion of the body and wings. In general, is seems especially the males which are provided with a chirping apparatus. But while the production of sound is thus shown to be connected with the mating instinct and to form a means of courtship, this function is also asociated with sight and smell. An unexpected discovery is that organs of hearing are more frequently found in butterflies that fly by day than in those that fly by night.

### THE "MISSION OF FRIENDS"

Previous to the American Bee Journal's subscription for the Franco-Belgian devastated regions, our readers will remember that efforts were made by the above-named society to help beekeepers. The man in charge of this was Mr. Graham-Burtt, a generous young Englishman who for several years devoted his time to the rebuilding of beekeeping in the devastated regions. We are now in receipt of a letter, a report, and several photos from Mr. Graham-Burtt. Unfortunately, the report is too much detailed to find place in our columns. But we clip the following interesting features from it. The diagram which accompanies the report, shows the area in which work was undertaken, and in which our representatives are still distributing help. The heavy line shows the furthest advance of the Teutons. The line marked .—.—.—.— shows the approximate position of the parts where destruction was total. The black area shows the part covered by the work of the Mission of Friends. Since not any indemnity has, at this date, been secured yet from Germany, our readers can judge of the amount of suffering still unrelieved. The people in the destroyed parts show a great deal of courage. But they welcome heartily anything which is done for them, as will be indicated by the letter received from Nancy, which we publish elsewhere in this number.

We wish to call attention to the fact that the A. I. Root people, previous to our own subscription, had already furnished 400 hives with supers and foundation at half price. Our own lists show that they gave an additional $300 worth, which is now being distributed, with the amounts subscribed in these columns.

The report shows that the Society of Friends, which sent a relief expedition to France during the war of 1870, again sent a similar expedition, under the name of "Mission des Amis," in 1914. The work of its members is entirely voluntary.

In November, 1914, 33 of these people landed in France, without definite plans, but ready to turn to whatever work seemed most needed. The part which most interests us is the supply of bees which they undertook as post-war work, at the suggestion of the Sous-Prefet of Verdun, beginning with 20 colonies offered by the American Red Cross.

Hives were made, supplies were purchased and an apiary started in the spring of 1918. In the fall of 1918, they had, in spite of the war conditions, 5 skeps and 19 colonies in movable frames ready for winter quarters.

With the coming of the armistice, arrangements were made with the Societe Centrale D'Apiculture for distributing bees and supplies, and a list of beekeepers was obtained from the Societe Meusienne of beekeepers. Dombasle-En-Argonne was chosen as the most suitable place for the apiary, the mayor offering the use of his orchard. Two huts were erected to keep the supplies, and donations increased the apiary to 40 colonies. In spite of the unfavorable season, chilly and cloudy, some honey was gathered, and increase was obtained.

The upshot of this work was the distributing, in the latter part of the summer of 1919, of 728 colonies, in good condition for winter, 154 of which were produced at Dombasle, the balance being donations. The greater number of the colonies, 584, were in skeps. But it must be remembered that the greater number of beekeepers in Europe are still inexperienced in the management of movable frame hives.

The work of distributing help from the subscriptions received in our columns is spread over a much greater area , since the funds are used throughout northern France and the devastated portions of Belgium. Our representatives are aiming to supply the help where the suffering is greatest.

Cash has been obtained for nearly all the queens subscribed which were not sent to Europe. A list of this, with additional donations, is published herewith. More help is still needed and will be welcome.

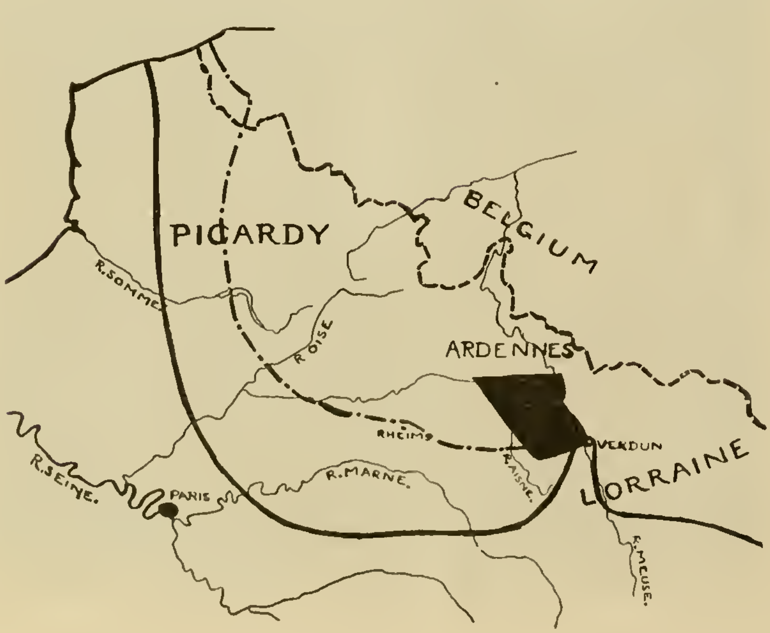
Letter from Mr. Authelin, of Nancy, France:

August 17, 1920.

Dear Mr. Dadant:

The Society of Beekeepers of the East met on July 29, at Nancy. They desire me to transmit to you and to the American beekeepers who have shown generosity towards our suffering beekeepers in this distress, their warm acknowledgements and thanks.

L. AUTHELIN.



### GRASSHOPPERS AND BEES

Grasshoppers eat honeybees. Have noticed them on the alighting board on several occasions, but never thought about them eating bees until today. My attention was called to one in the act of catching a bee. I watched it until it ate off both wings and legs; also ate off the head, and finally commenced to chew on the stinger end, before it seemed to have enough. L. A. SCHOTT.

Missouri.

(It appears that grasshoppers will eat anything except iron and stone. We had never heard of their eating bees before.—Editor."

### ANTS

For the benefit of the enquirer asking for a remedy for ants, I would say that if a small block of wood, say 1 inch square by 2 inches long, is placed under each corner of the hive or stand and then with a little paddle smear a streak of "tree tanglefoot" around the blocks there will be no further trouble with ants. The tanglefoot will remain sticky for three months exposed to the weather. It is manufactured by the O. & W. Thum Co., of Grand Rapids, Mich., and is for sale by Peter Henderson & Co., New York. It is put up in 1, 3, 10 and 20-lb cans. One pound will take care of 25 hives for a couple of years. E. M. BARTEAU.

Long Island.

### SQUIRREL AND BEES BATTLE

Clear Lake, S. D.—Aug. 16.—There was a riot in John A. Thornson's family that attracted the attention of the whole neighborhood. Mr. Thronson's family of fox squirrels have a neat little home in the trees about the residence, and a swarm of bees took possession of the house. The mother squirrel put up an awful fight for the protection of her three babies, the second litter of the year, but the bees finally drove her out. She gathered the babies up and placed them on the step of their home, and there they were rolled up like balls to protect them from the stings of the bees.

As fast as she could, the mother grabbed a baby and carried it to one of the other squirrel homes and during her three trips she was badly stung. The babies would squeal every time a bee stung them, and she was the busiest old mother ever until she had her babies in their new home. Then she was busy carrying up dry leaves and other plunder for a new nest, and after the job was completed she renewed her attack on the swarm which had robbed her of her happy home.

The battle was watched with interest by the neighbors. Mr. Thronson finally secured the services of a "bee" man and he smoked out the pests, and order was restored at the Thronson home.—News dispatch.

### EUROPEAN FOULBROOD

By Arthur C. Miller

I do not expect to say anything particularly new about this trouble, but hope to present some phases of it in a different light and ask a few questions.

For over 30 years of my beekeeping experience bee diseases were unknown here so far as actual experience was concerned. A few years ago European foulbrood appeared in the western part of the State, and it has spread steadily, despite constant fighting. American foulbrood appeared in three widely separated points at different times and was traced to feeding purchased honey. It was detected at the start and cleaned up and has not since reappeared. But the pesky European foulbrood stays with us. Some of its spread is traceable to shipping of bees from diseased apiaries, but some cases have appeared in isolated places and careful investigation fails to give any clue to its origin.

And these new points of infection refuse to yield to any of the customary methods of treatment. The disease seems particularly virulent, spreads through the infected colony with startling speed and dequeening, uniting and requeening yield nothing but one's labor for their pains.

Here is one case in point. A very strong colony of high-grade bees, clean and sound, were supered. In six weeks they had put up about 100 pounds of surplus, and on its removal the brood-combs were found to be utterly filthy with the disease. Not over a few hundred healthy larvæ were to be found; but, strange to say, the colony was still strong. This colony was a half mile from the nearest known one. Now, where did the disease come from, why did it spread so fast and why did not the accumulated filth in the brood-combs affect the adult bees in any way or drive them from the hive?

Here is another phase of the trouble. A strong colony of hybrids had the disease, were dequeened and allowed to develop one, which was removed before mating. A fortnight later, after all brood had emerged and, so far as examination disclosed, the combs were clean and shiny, a new Italian queen was introduced, and just as soon as her young were old enough they showed distinct and extensive infection. Now what can a poor plain garden variety of beekeeper do under such circumstances?

Another case. A big, strong colony of pure Italians of a reputed resistant strain showed the disease in mid May. It was extensive enough, but not so bad but what there was a goodly amount of young bees emerging. It was allowed to go until a young queen was available, when the conventional treatment was followed. The results were such that I am beginning to lose my respect for the conventions. The colony kept strong, and so did the disease. Also so did the honey flow and the storing of surplus. The treatment was repeated and re-repeated, and still yet again, and the disease is still there. I am about ready to apply the torch and abandon that yard.

As to "immune stock," I am wondering if there is any such animal? I have found some quite resistant strains, but when they do get a dose of the virulent type they succumb as well as any others.

Here are some questions for our scientists, Dr. Phillips and others: Will young queens growing in infected colonies, and which survive the disease, be more resistant than queens reared in healthy colonies?

Cannot they—the eminent ones—find some way to combat the disease other than the so often useless requeening? Or else will not one of the tender-hearted ones find some painless and delectable way of protecting the bee manipulator from the sight and odor of the indescribably filthy combs of a badly infected colony?

To you, beloved wiseacres, I appeal for help.

Rhode Island.

### BEES IN THE ORCHARD

Believing that more complete pollenization of apple blossoms would strengthen the set of the fruit, W. B. Armstrong, L. J. Shadbolt and a number of neighbors in the Lower Naches this spring rented 150 stands of bees from an apiarist and placed them at central points in the orchards. Just before the calyx spray the owner of the bees was notified and removed them. "'I am not prepared to say,' says Mr. Armstrong, "that the result will increase our crop by any definite percentage. But the

A skep apiary in Normandy from which bees were purchased, autumn of 1919 indications are that through the whole district the set of fruit is stronger, and the drop less, than it has been in previous seasons. In fact, it looks as if we could get a real crop this year. We think enough of the results that we are planning to make a similar arrangement next year."—Big Y Bulletin, Yakima.

## MIGRATORY BEEKEEPING

By R. E. Lusher

As soon as the orange flow begins to slacken, we start moving to the sage and buckwheat locations, some of which are 112 miles, part of the way over a range of mountains.

Each sage or buckwheat location accommodates from 75 to 100 colonies, as it doesn't pay to overstock the location.

We use all loose bottom-boards and half-inch entrances, and when moving from one location to another we use two laths on each side, running them from the bottom-board up to the screen, and put three 1-penny nails in the bottom-board, two in the brood-chamber, one in each super and two in the screen. This holds everything solid, and with a special screen over the entrance, not a bee gets out.

We use all 3-inch screens, and in moving as many as 15 apiaries, twice and sometimes three times a year, we lose no bees, since using this method. We also own and manage 11 apiaries 265 miles from here, and camp there during the honey season.

This apiary is located in one of the best sage locations in this part of the county, and as it is situated high up in the mountains and is reached by a very difficult road, there is no danger from overstocking the range, as few beekeepers care to go to the trouble of moving up there for the sage and then moving out, which has to be done in the fall, as the roads are not passable for trucks in winter.

In some of the locations of easier access to trucks a fellow sometimes rents a location for bees and moves in and then at his next visit to the apiary finds that some of his fellow beekeepers have been very neighborly and moved in "next door," and then comes the test to see which is the best beekeeper.

California.

## HOME-MADE EQUIPMENT

By Cyrus Darling

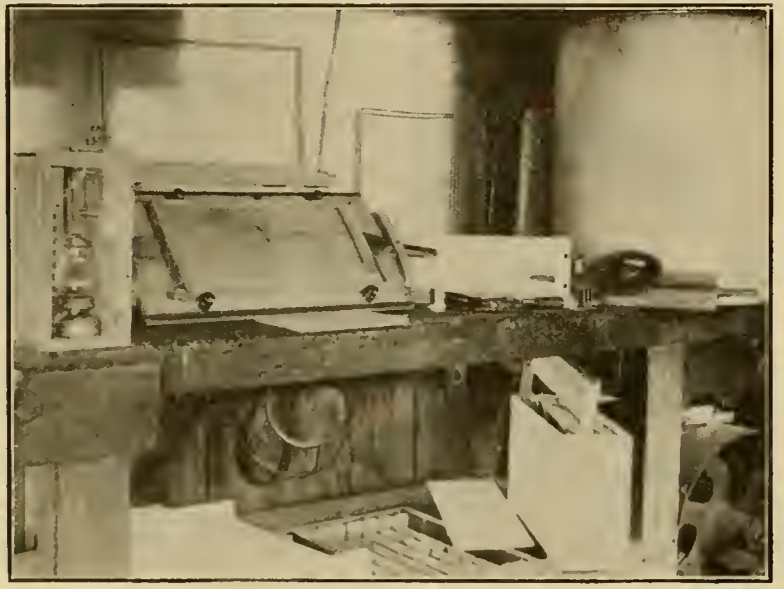
Perhaps your readers would be interested to see a picture of parts and accessories to beekeeping that I have made entirely during the cold winter.

Under the bench can be seen the hive with section holders and hive cover, and to the right a decoy hive of three frames. On top of the bench, to the extreme left, is a section foundation fastener, then a frame wiring device of my own design; the toggle handles spring the frame one-eighth of an inch on both sides and the wire thus drawn comfortably tight (for you all know how it cuts one's hands), will spring out with a fine ring.

In the center of the picture, at the back, are baskets in course of making, for the extractor, the can for which may be seen at the right. Momentum gear and center pinion run approximately five to one, lying on bench near can.

The extractor will be reversible, with free gear on top. The release from mesh is taken care of by means of a spring and release rod, which show clearly in the photograph.

Massachusetts.



Cyrus Darling's home-made equipment.

## HOW I SECURED BEES

By C. W. Moore

This spring I tried to buy some bees, so as to get practical knowledge by handling them. But they were very scarce, and those who did have bees did not have any to sell. So I decided to try setting out traps, to catch a few swarms. Going to the grocery stores, I got empty apple boxes, or any other boxes about the right length and depth for a frame. I then proceeded to make covers for my boxes, and an entrance for the bees. After washing out the boxes with real salty water, I would put seven or eight frames with full foundation in them and set them out in trees, or around the groves of people I knew. I set out fifteen such traps and caught twelve fine swarms of bees. Two of these swarms have made over 100 pounds of surplus honey each, and they will all make enough to winter. As soon as I knew I had a swarm in one of the old boxes I would take out a new 10-frame Langstroth hive and transfer them into it, putting on a drone and queen excluder and a set of extracting frames above it, thus giving them plenty of room to work. Two swarms have already filled two sets of extracting frames. So far, the bee business has been a pleasure and a surprise to me.

Iowa.

## EGG-LAYING OF THE QUEEN PREVENTED THROUGH MECHANICAL OBSTRUCTION

By Geo. B. Schafer

Two cases of normally mated queens, unable to lay eggs, may be of interest to beekeepers.

During the summer of 1919, on looking into a nucleus 12 days after a ripe queen-cell had been given, a fine Italian queen was found. She walked quietly on the comb among the bees, and they seemed quite attentive to her. Her abdomen was enlarged to the size usually noticed in young queens just beginning to lay. A careful examination of the comb, however, showed that no eggs were present. Not much thought was given the matter at the time, since it was presumed that she would be laying within a day or so. Three days later, however, the nucleus was opened, and still the polished cells of the comb contained no eggs nor young larvæ. After that the nucleus was opened daily for a week, and no eggs were seen in the comb. There was a moderate flow of nectar at the time, and queens were beginning to lay in other nuclei in from 10 to 14 days from the date on which they emerged from the queen-cell. This particular queen, therefore, excited curiosity, since for 10 days she had given the appearance of a fertile queen on the comb without depositing a single egg. She was caught for close inspection, and a good hand magnifier revealed clearly the "bulb" of a drone organ torn off within the entrance of the vagina. The "bulb" was tan or brown in color (instead of white) and slightly shriveled from drying, so that it could not be readily seen with the unaided eye. It was quite firmly fixed in place, but was finally dislodged, without apparent injury to the queen, by the careful use of a pair of fine forceps. The queen was then returned to the nucleus, and on the second day thereafter many eggs were found in the comb. Her eggs hatched in due time and the queen became a normal productive mother. It was evident that she had not laid during the "10 days" mentioned, because the "bulb" left by the drone in the act of mating had, in this case, become firmly fixed (so that it was not removed by the bees) and completely obstructed the passage of eggs from the vagina.

This summer another case of the same kind was received from Deputy Inspector Russell H. Kelty, Michigan Agricultural College, East Lansing, Mich. The following explanatory extract is from Mr. Kelty's letter:

"I have mailed you a queen from the apiary of Dr. Palm, of East Lansing. . . . . The queen has been in the hive over two weeks and appears to have mated, but no eggs have been laid."

This queen was noticed by Mr. Millen, Provincial Apiarist, Ontario, Canada, who was calling on Dr. Palm. Mr. Millen brought her to Mr. Kelty and through their kindness (knowing my interest in the subject of queen mating) she was sent to me for dissection.

Examination showed that the "bulb" of a drone organ (in a partially dried condition) was still present in the entrance to the queen's vagina. On the dorsal side the ovipositor had pierced the edge of the "bulb" so that, through the drying of the latter, the two (i. e. ovipositor and bulb) adhered together quite firmly, and the egg-laying passage was completely blocked. The queen was almost dead when she arrived, most of the attendant bees in the cage with her having died on the way. Had she arrived in good condition, no doubt she might have become a normal egg-laying queen after the partially dried obstructing "bulb" was removed. Her abdomen appeared that of a young queen ready to begin laying, and eggs were present in the vagina.

The two queens described here are also of especial interest because the orientation of the "bulb" in each case seemed to confirm the report made in Technical Bulletin No. 34 of the Michigan Agricultural College Experiment Station that the queen and drone must meet ventral sides together (i. e. face to face) in the act of mating.

Physiology department, Stanford University, August 27, 1920.

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## TWO QUEENS IN ONE CELL

By Jes Dalton

This is a sequel to the article on page 308 of the September number.

Shortly after the observations reported in the above article, I inserted a ripe queen-cell in the colony. It was destroyed, as well as the one in which the queen had laid. A few queen-cells were again built and destroyed after being sealed. At length one was built on each of 3 combs. Finally one of those hatched, the virgin was tolerated in the colony and I kept watch of her until she mated and began to lay.

Both queens are still in this small colony, both laying, and sometimes on the same comb, not more than an inch apart, September 10.

I have had much amusement showing them to neighbor beekeepers, both on the same comb, both of equal size and one only a couple of months younger than the other. I shall leave them and see how long they remain.

The older queen sometimes does not succeed in depositing her eggs in the cells, but they adhere to her and are wasted. I presume this is the key to the whole matter. Something similar may be the explanation of Mr. Dickerson's experience, mentioned on page 299 of the same number.

In requeening some other colonies this past summer, I found a good-looking virgin in the same hive with a good-looking old queen. I took out the old queen with some frames of brood, setting them on a new stand and inserting a ripe queen-cell with the old queen. She hatched out, mated and began to lay. I repeated the performance, three consecutive times, and succeeded. I had intended to carry the experiment further, but this yard being in an out-of-the-way place some vandals opened the little hive to take honey, and the colony was finally robbed.

Louisiana.

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## ONTARIO'S FORTIETH CONVENTION

The Ontario beekeepers are holding their 40th annual convention at the Ontario Agricultural College, Guelph, on December 1, 2 and 3, 1920.

Ontario has always been noted for largely attended and interesting conventions. This year a record attendance is expected, in view of the fact that the new apicultural building will be formally opened by one of the members of the Ontario Cabinet.

The new apiculture building is thought to be the finest and most modern building in North America, devoted entirely to beekeeping.

The program includes some of the most prominent beekeepers of both the United States and Canada.

The Secretary is making all arrangements for rooms to ensure comfort while attending the meetings.

The Ontario Beekeepers' Association issues a hearty invitation to all beekeepers, both north and south of the invisible line, to attend this convention. Programs and full particulars will be gladly sent by the Secretary, F. Eric Millen, Ontario Agricultural College, Guelph, Ontario.

## WINTERING IN NEVADA

I had good success wintering last winter with a sheet of 1½ inch building felt placed under the corners of each hive.

The bees had several good flights and the temperature went as low as zero here. I looked in on several occasions on cold mornings and the bees seemed more active and clustered nearer the top than usual.

The felt can be bought cheaply, as a large roll only cost $4.50, which is enough to equip over 200 stands.

IRA G. BLUNDELL.

# BEEKEEPERS BY THE WAY

### A Veteran Queen Breeder

For 48 years J. M. Davis, of Tennessee, has been rearing queens. This very probably puts him at the head of the list for length of continuous experience as a queen breeder. Queen rearing is a fascinating line of work, but it has its disagreeable features. The customer lives at a great distance and it is hard to explain the difficulties which must be met in rearing good queens and getting them to the purchaser just when he wants them. Davis was a railroad man who took up beekeeping as a side line. Living in a section where the honey-flows are uncertain, he decided that queen breeding offered a better dependence than honey production. He has been remarkably successful in developing a strain of bees which have given good satisfaction and in rearing them in sufficient quantity to make the business worth while. He has lived to see beekeeping developed from a fad to a real business, and the demand for queens increase from a few hundred annually to such a point that the combined facilities of all the queen breeders of America are unable to supply more than a small part of the possible need.

America's oldest queen breeder

## IN SIBERIA

In our August number, we published a short description of conditions in the eastern portions of Siberia, by Mr. William Slovig, a Hungarian officer prisoner of the Japanese, near Vladivostok. He now sends us two photos and the following letter:

Vladivostok, Aug. 15, 1920.

Your kind letter of June 30 is at hand. I will gladly send you photos presenting conditions in beekeeping. I have but two at present, which I send you. No. 1 represents Hungarian officers (prisoners in the Japanese camp) with models of different hives which they worked out for the purpose of giving lessons in beekeeping.

No. 2 represents also Hungarian officers studying beekeeping. This is the only hive of bees within the camp, with which they are daily experimenting.

Yesterday we had an excursion and took some photos of Russian apiaries which, in case of my leaving for home—as I will probably be able to start this week on board of the President Grant—I will arrange to have sent from here or after arriving home. I gave orders to one of my friends who will stay here for some weeks, to bring with him the copies of the American Bee Journal which you were kind enough to send me and which have not arrived yet. I will write you further when I send the other photos.

Yours very truly,
WILLIAM SLOVIG.

## PARTITION IN CELLAR

I believe bees could be safely wintered outdoors in this place with such packing as you people use at Hamilton. I am thinking of wintering part of mine that way, but expect to put most of them in the cellar under the house. The basement is dry and the furnace room is well closed off from the storage room. As the storage room is much larger than necessary, I will make a partition of heavy building paper on a light frame-work of lath. I have found this to be a very satisfactory way of making a repository for wintering bees in a basement where there is need of a temporary or cheap partition. The idea is not original with me and may be in common use, but I believe many readers of the Journal, especially "sideliners," would find in this a practical suggestion for providing winter quarters for a few colonies in a corner of the basement.

Ames, Iowa.

WALLACE PARK.

## AN IDAHO LOCATION

Apiarists in search of locations are recommended to investigate the possibilities of Benewah County, Idaho, about 50 miles east of Spokane. It is asserted this county offers a splendid field for the production of high grade honey. The county seat is St. Maries, a bustling, growing community intensely interested in all factors that help to build up the city. The county agent is Victor Rockwell, a live wire. Two years ago a representative of the Federal Government made a survey of the St. Maries section to ascertain its possibilities from the apiarists' standpoint. His report is said to have been that there was ample room for at least 2,000 colonies. The present total is probably not more than 100 colonies. One of the best nectar-producing plants in the district is the fireweed, which is wonderfully abundant and which yields nectar from early spring until killing frosts arrive in the late fall. Wide areas of cut-over lands surround St. Maries, in addition to the usual cultivated fields, and the pasture for bees is described as excellent. The market is unusually good.

Spokane, Wash., News Bureau.

## VIRGINS NEED ROYAL JELLY

By Jay Smith

In the September number of the American Bee Journal, page 307, Arthur C. Miller asks for the experience of others concerning whether or not royal jelly is necessary for virgin queens. Your experience, Mr. Miller, corresponds with mine. For a number of years I used nursery cages for the virgins to hatch in, caging the cell about 24 hours before time for it to emerge. I noticed that the newly-hatched virgins "sorter had a hankerin'" for royal jelly and would clean it all out of the cells. Sometimes they would gnaw down into the base of the cell clear to the wooden base, probably hoping to strike another jelly vein. Many would be found dead in the holes they made. I know my style of candy did not suit, so I placed a little honey in the cages; but this did not seem to satisfy that craving after jelly.

I then began to reason that if the virgin required jelly, probably in her natural environment the nurse bees fed it to her, and if that was the case, nice, fresh, warm jelly is as much better than hard, cold, dried-up jelly as a nice, ripe, delicious apple is better than dried apples. (Ever eat 'em? They are awful).

This led me to make some experiments. Out of the same batch of cells I caged part and gave the others to nuclei without cell protectors. Those in the nuclei hatched first in most cases. Those hatching in cells were introduced to nuclei. Out of 17 of each, 16 of the queens from the cells that were given to nuclei were laying before the first one from the 17 hatched in cages was laying. Subsequent experiments gave about the same results. I frequently noticed that if a virgin was caged three days she mated three days later than if she had hatched among the bees. This proved to me that the virgin needs the attention of the nurse bees if the very best queen is to be reared; therefore I "junked" all my nursery cages and gave a naked cell to the colony or nucleus.

For the same reason I abandoned the cell protector. In the first place, it does not do any good. It is well known that a colony will accept a cell more readily than a virgin. So if they would not accept a cell and you put a protector around it—why, they just appoint a vigilance committee to keep an eye on that cell, and as soon as Miss Virgin pokes her head out they nab her and kill her. That is all they do to her except drag her out.

But if you do not give them so ripe a cell, one that will hatch in about three days, it will work all right. Yes, but if you leave them queenless two days and give them a naked cell that will hatch in one day, they will accept it too; so you have not saved anything by using the protector, but you have gained a whole lot by **not** using it. . The bees have access to the cell and thin down the wax and cluster about it, thereby giving it the proper incubation; and when the virgin comes out, there stand a row of nurses with mouths chuck full of jelly, ready to feed her.

For the best results, we should

Prisoners of war studying beekeeping in Siberia keep as close to bee nature as possible.

Vincennes, Ind.

(The editor applauds with both hands at these conclusions, for he had also tried the queen nursery, years ago, and did not like it. We always succeeded best when we kept close to nature).

## ILLINOIS FIELD MEET

The demonstration meeting of September 10, at the home of A. L. Kildow, State Inspector, was attended by some 50 people, the greater number having come by automobile.

The demonstration of both American and European foulbrood interested all present, for foulbrood appears to be the order of the day throughout the United States. It is a good thing for novices to become acquainted with these diseases, as they are little to be feared if one watches for them and keeps them down.

Professor Flint, of the University of Illinois, gave an interesting talk concerning the influence of bees upon fruit bloom fertilizing. He explained how it was that apples and other fruits drop, shortly after bloom, when not fertilized. He stated that only thoroughly fertilized fruit grows to perfect form; that when the seed remains unfertilized in one of the carpels, or seed vessels of the fruit, that side of the fruit is imperfect. This reminded us of the exhibition of this matter in the American Bee Journal, in December, 1912, which shows conclusively that there is such a thing as imperfectly fertilized fruit.

Mr. H. H. Parke, of the Illinois Department of Agriculture, spoke upon the general need of more education on all matters of farm information, the industry of beekeeping being among those requiring greater attention than it has already received. In this connection, Mr. Kildow stated that government bulletins are often too scientific for the ordinary farmer, and that there is need of more elementary explanations, with the use of as few scientific terms as possible, through the production of bulletins more adapted to the common school education of the average farmer.

Attention was called to the fact that the present foulbrood law is inadequate, more funds being needed to attend to the wants of suffering apiaries throughout the State during the busy season. The appropriation of a larger sum for the needs of beekeeping is necessary, and Illinois should be on a par with such States as Wisconsin, Michigan and Minnesota in this matter. All those States spend more for foulbrood prevention and cure than Illinois. The present Illinois law gives a per diem of only $4 to its inspectors, which is hardly as much as is obtained by the least skilled laborer at the present day. The law, passed by the Legislature in 1911, needs revising. This was very plainly shown by the different speakers on the subject.

A resolution was passed as follows: Resolved, That it is advisable to have some one at the Illinois State University especially in charge of beekeeping, under the State Entomologist.

The meeting adjourned at 4:30 and the beekeepers present expressed the wish that several such meetings be held within the State each summer.

## MATING QUEENS UPSTAIRS

Dear Mr. Pellett: On page 85 of Practical Queen Rearing, you say to put a hive-body of empty combs over the excluder and body containing old queen and frame of brood below. Would a hive-body of foundation, full sheets, do if no combs could be had? Into the hive-body containing the brood, placed on top of the two lower bodies you say give a queen-cell? Would not a queen properly introduced work out instead of a cell? If not, why not?

Iowa.

To your first question I would say that I can see no reason why a hive-body of full sheets of foundation might not serve in case combs are not available. To the second will say that I have never tried introducing a queen to the upper story. If laying queens are available there is no particular need of introducing above, as the object of the method is to keep the colony together until a laying queen is available for the upper story before a division is made. If the upper story is left in place for too long a time after the second queen begins to lay, one of the queens is likely to disappear. While this method of mating a queen above the brood-chamber has been quite successful with me, many have written that it has failed with them. On the other hand, I have had numerous letters from those who have succeeded very well with it. Some write that they succeed better with two hive-bodies of combs between the lower hive containing the old queen and the one on top with a queen-cell. A British Columbia beekeeper has reversed the method and places the old queen above and leaves the queen-cell in the lower story. He states that he seldom has a failure of the young queen mating and beginning to lay by this plan. In any case it is necessary to success that there still be sealed brood present when the young queen is mated and ready to lay. Otherwise she is likely to be lost in an attempt to pass through the queen excluder and reach the brood-nest of the old queen.

FRANK C. PELLETT.

## YOUNG QUEENS

By E. S. Miller

I am glad to note what Mr. C. P. Dadant says in the September number in regard to 2-year-old queens. All my best colonies this season have been headed by queens reared in 1918. In fact, queens reared from my best stock usually do better the second year. This has not been found true of those purchased. Whether it is due to injury in shipment or whether commercial breeders do not use the proper care in rearing good stock, I do not know. Probably the strain of bees has something to do with it. Then, there are localities where a protracted flow would tend to shorten the term of a queen's usefulness.

Mr. George B. Dickerson's report of rearing two laying queens in one hive reminds me that I have observed this occurrence twice within the last two months. The first was noticed during a heavy honey flow in a strong colony in a 10-frame hive with excluder and two full-depth supers. In place of the old clipped queen present two or three weeks before, there were now two young laying queens, both on the same comb. In the second case a two-frame nucleus had been formed in a 12-frame hive with a ripe queen-cell. Ten days later, as the young queen seemed to be missing, a second nucleus was formed at the opposite of the hive. In two weeks both queens were found to be laying.

About mating queens from an upper story, I would suggest that the following be tried, as it has been

Hungarian beekeepers who are prisoners of war in Siberia

Group of beekeepers at the Putnam, Illinois, field meeting

found to work well on a few occasions:

Put the old queen below with a frame of brood and empty combs or foundation. Next, place a queen excluder, then one or more supers, then another excluder, and at the top of all place the brood with a ripe cell from your choice breeder. Shove the hive-body containing the brood and cell forward, just a little, so that the queen can get out at the back. The two excluders, being a considerable distance apart, will tend to prevent the virgin from "raising a rumpus" in the vicinity of her maternal ancestor, a proceeding which may result in the exodus of at least one queen and a portion of the bees. Somehow I cannot feel just right toward the fellow who will bore an auger hole in a perfectly good beehive.

It is not necessary to discard sections which have become discolored, especially if the honey is to be sold locally. By the use of sandpaper they can be made to appear almost as good as new. If the number is large, a pulley belt or a grinder wheel replaced with a wooden disk, covered with coarse sandpaper may be used, but if there are only a few hundred, just place a sheet of the paper on a smooth board and rub the filled sections over it.

The following will bear repetition: To make a flour paste that will stick to tin, add a tablespoonful of honey to each teacupful of paste. Boil thoroughly, but do not allow it to burn. Fresh paste should be made for each lot labeled.

Wanted—The best method of disposing of cappings. We use a capping melter after the extracting is all done, but it is a slow and tedious job.

In the spring of 1919 there was clover, clover everywhere resulting, we might almost say, in not a drop of clover honey. Last spring it was difficult to find a leaf of white clover anywhere, and the sequence—well, it has rained honey all summer. In the future I expect to leave prophecy to the other fellow.

Valparaiso, Ind.

## IOWA CONVENTION

The Iowa Beekeepers' Convention will be held in connection with the Horticultural Congress, at Council Bluffs, Iowa, November 17, 18 and 19. Secretary Paddock writes that they hope to make it the biggest and best convention in the history of the organization. It has been decided to meet at Council Bluffs instead of Des Moines this year for two reasons: first, to accommodate members in the western part of Iowa who felt that the convention should be moved to another city for an occasional meeting, and second, to enable those who intend to exhibit at the congress to attend the convention at the same time. The Midwest Horticultural Exposition officials are co-operating with the beekeepers in every way possible and a liberal premium list has been offered for the beekeepers' products. It is hoped that there will be a large display of bees and honey to justify their confidence. Live beekeepers will do well to take an exhibit and help advertise our product to the thousands of visitors who will attend the exposition, while helping to pay their own expenses to the convention from the premiums.

Those who are interested can secure premium lists from Prof. F. B. Paddock, State Apiarist, Ames, Iowa. He will also supply programs of the convention when completed.

Dr. A. F. Bonney, President Iowa Beekeepers' Association

## ODDS AND ENDS

### Western New York Meeting

The annual fall meeting of the Western New York Honey Producers' Association will be held in Buffalo, N. Y., at the Genesee Hotel, November 9 and 10. All interested in beekeeping or honey are cordially invited to attend.

### Apalachicola Crop Short

Beekeepers complain that the publication of a report to the effect that the crop of Tupelo honey was unusually good, had a bad effect on their market. It is stated that this report was unfounded and that there was not to be one-third of a crop in the Apalachicola district. Estimates which are above the true condition have a tendency to depress the market.

### Honey Supplants Sugar

Italy is devising means to alleviate the beet sugar shortage. She has been urged to put more bees at work producing honey. Italy in 1917 had nearly 67,000 miles of railway, and at regular intervals along the lines are little houses where the railway employees, signalmen, track walkers and repairmen live. The manager of the National Institute for Agrarian Assistance recently recommended that they each be given a hive of bees. In conformity with the suggestion, the experiment is to be begun at once on the lines in the Province of Rome, and if successful, it will be extended to all the railways of Italy.—Exchange.

### Course in Beekeeping in Spokane

Braving the worst thunder storm of the season 62 persons attended the opening lecture of the special course for beekeepers at Spokane. In charge of the course, which will last all winter, is George W. York. He will have associated with him several experienced apiarists and the course will embrace practical work in some of the beeyards of the vicinity. The initial attendance is regarded as exceptionally satisfactory and an indication of keen interest in bee culture. The opening meeting took place in the Chamber of Commerce assembly room and was devoted largely to an illustrated address. When the course was announced a local newspaper criticised the suggestion bitterly and denounced the idea of maintaining bees in the city.

### A Simple Cure for Ants

During the early spring I moved several colonies of bees to the mountains, setting them on large flat rocks. About June 1 I noticed large red ants in great numbers, having made nests directly under the hives. I tried several remedies, without results. I then tried as follows; it worked to perfection: I placed two pieces of soft wood 3x4x18 inches, under each hive. These I coated with a heavy roofing composition made by the

High Grade Manufacturing Co., of Cleveland, Ohio, namely, Gilso Roof Paint. As it is very slow drying and has a strong odor, it not only removed the ants from the hives, but also from the rocks.

A. F. REXFORTH,
Harisburg, Pa.

### Note From England

J. J. Kettle, in the British Bee Journal of September 9, spoke of a farmer selling honey in sections "under the hammer" at 2s 4d each. In normal times this would mean 58 cents in U. S. money. Under present exchange conditions it means only about 42 cents per section. Mr. Kettle, who writes a very interesting department in the British Bee Journal under the heading of "A Dorset Yarn," speaks of tilling 50 acres of land and employing ten hands. Evidently they till the land more thoroughly there than we do here, for a farmer of Illinois with 50 acres would rarely have any help at all, but his horses and machinery.

The Indiana State Beekeepers' Association claims the gain of 40 new members during the month of August. Marion County heads their list of members with 40 beekeepers. This is taken from the Monthly Letter. Those interested should write to C. O. Yost, Secretary, State House, Indianapolis.

### Remedies of Olden Days.

For dysentery and other diseases of the adult bee, Columella (De Re Rustica, A. D. 45) recommended feeding them good honey mixed with pomegranate seeds or bark boiled with wine. This made a tonic and the wine evidently lost its alcohol in boiling.

### Merriam in Central America

H. S. Merriam, formerly of San Marcos, Calif., and son of Col. G. F. Merriam, well-known to American beekeepers, is now in Central America, handling several large apiaries. Those countries, with such warm climate, have an almost continuous honey flow.

### The Tin and Glass Market

Friction-top cans and glass jars are becoming easier to get, although there is no reduction in price. Five-gallon cans are still very scarce and high in price. In June one glass company reported orders for a thousand carloads which they were unable to move.

### Iowa Men in Louisiana

A. G. Kuersten and W. F. Reppert, formerly of Burlington, Iowa, are now rearing bees on shares for G. Frank Pease, at Shreveport, La. They report a crop of two or more carloads. Their honey at Burlington is yet to be extracted, but the crop will be small.

### Longevity in the Use of Honey

Dr. Miller, who lived to 89, used honey for sweetening, and ate honey every day. But he was not the first man to consider honey as a help to the lengthening of life. Diophanes, a Greek writer of heroic days, wrote: "Eating only bread and honey gives long life." Hippocrates, the "Father of Medicine," 400 years B. C., wrote that honey is nourishing and gives a clear complexion, and a healthy appearance to aged people.

### Mexico

Mexico is rapidly developing in beekeeping. The Dadant-Blatt hive, of European countries, is generally used there. This hive is practically the same as the modified Dadant hive.

### New Bee Escape

A four-way bee-escape has been devised and is soon to be put on the market by the G. B. Lewis Company.

### Better Freight Service

Freight shipments are now moving more freely. Shipments taking two weeks for delivery in the spring, are now going through in four or five days.

Railroads of the United States have recently placed orders for more than a million steel cars for delivery as soon as possible. Parties acquainted with the steel markets insist that there will be no reduction in steel prices for eighteen months or more, owing to the enormous demand for all sorts of material by the railroads.

### Leaking Barrels

The writer recently examined a shipment of six barrels of honey which had been shipped contrary to railroad regulations; six-hoop barrels of white pine. All were leaking badly and robber bees were busy. Only hardwood barrels should be used for shipping honey, and these should have at least eight hoops.

### A Good Crop

L. L. Andrews, of California, reports a crop of sixty tons of honey for 1920.

### Second-hand Cans

Many of the larger bottlers of honey dispose of second-hand five-gallon cans to oil and paint companies. They bring relatively a low price, but this is far better than trying to use them again for honey.

### A New Beeman in Texas

W. C. Collier, of Goliad, Texas, writes announcing the arrival of a son during early September. Mr Collier will be remembered as one of Texas' largest beekeepers. He was a representative at the Honey Producers' League in Kansas City last winter and while north visited Hamilton.

### A Live Texan

E. G. LeStourgeon, of Texas, visited Hamilton on his way back from the Watertown meeting. A more dynamic man than LeStourgeon is hard to find. With the aid of his Texas associates he has made a great success of the Texas Honey Producers' Association, and if given proper support, should make something of the Honey Producers' League.

### The Fall Crop

The honey crop in the fall regions has been short, about half of last year. Heartsease and aster yielded little and the fall honey, therefore, was practically all from Spanish needle and of a rich goldenrod color.

### A Tight Truck Body

The Sunny South Apiaries of Texas have a truck sufficiently tight that Mr. LeStourgeon, the manager, was able to restock his private pond with fish hauled from a distance, using the truck as a tank.

### A Vacation Trip

A fall trip in a houseboat has its attractions. Such a trip is being made from Meredosia, on the Illinois River, to the Gulf, by a beekeeper, Mr. Jas. Grover, of Hersman, Ill.

### Scott County Beekeepers Meet

The Iowa Beekeepers' Association has organized a number of county branches. One of these is the Scott County Beekeepers' Association, which held an outdoor meeting at the farm of Chas. W. Lau, on September 21. More than 50 persons were in attendance. Mr. J. H. Paarmann, curater of the Davenport Academy of Sciences, is the Secretary, and the members credit much of the success of the organization to him.

The Lau farm is a place of unusual interest to the beekeeper, for in addition to a well-kept apiary, there is a large collection of trees which are seldom seen in Iowa. There were a number present who had never seen the yellow-wood, tulip tree or tulip poplar, tupelo gum and others which are far-famed sources of fine honey. Mr. Lau has spent a life-time in gathering a magnificent collection of forest trees, some of which have been growing for many years. In addition

Scott County, Iowa, beekeepers taking it easy while they listened to E. M. Atkins to those mentioned, there are several species of magnolia, European white thorn and a number which are not of value for honey.

M. H. Hoffman, the County Agent, co-operates with the County Association and lends every assistance to making the meetings a success. The county branches of State Associations are doing much to sustain interest in beekeeping and to raise the standard of the craft.

### Central Plant

Probably a small per cent of beekeepers in the East and South use the central plant in outapiary work. It is used more in the west. Good roads and steady, long honey flows are desirable with this system.

### Sugar Prices

Raw sugar is selling in New York at 7½ cents, while refined sells at wholesale from 11 to 14 cents. Opinions are divided on the future of the sugar market. Many authorities claim still a world shortage and expect a rise in price as soon as a major portion of the beet sugar crop is disposed of.

### Beemen at Watertown

Twenty of the well-known producers of honey and buyers of honey and beekeepers' supplies visited Watertown, Wis., September 15 to 17, where an informal program was put on for their benefit by the G. B. Lewis Company. Plans were discussed for the stabilizing of the honey market, and some definite projects outlined to accomplish this.

The guests were entertained at Lake LaBelle, Oconomowoc, at the Majestic Hotel, and lunches were served each day at the Elks' Club, Watertown. Auto trips around nearby lakes served as a diversion from the business conferences. Prof. H. F. Wilson, of the University of Wisconsin, and Dr. S. B. Fraker, State Department of Agriculture, appeared on the program, along with some of the other honey producers.

### Muscatine County Meeting

The beekeepers of Muscatine County, Iowa, met on September 30. In spite of unfavorable weather, which spoiled the plans for a picnic, a goodly number gathered to enjoy talks on practical beekeeping.

### Demuth to Medina

The announcement has recently been made that George S. Demuth, of the Bureau of Entomology will assume editorial charge of Gleanings in Bee Culture on November 1. Mr. Demuth has shown himself to be a very capable man, both as a practical beekeeper and as assistant to Dr. Phillips. Gleanings is to be congratulated on the addition to its staff.

### Atkins to Leave Iowa

E. W. Atkins, who has served the beekeepers of Iowa as extension lecturer under joint supervision of the U. S. Bureau of Entomology and the Extension Department of Iowa State College of Agriculture, has resigned, to take effect on November 1. After that date Mr. Atkins will be employed by the service department of the G. B. Lewis Company, of Watertown, Wis.

Many beekeepers will regret Mr. Atkins' decision to leave the extension work. He worked for a time in the States of Missouri, Kansas and Nebraska, later giving all his time to Iowa. His work has been very successful and he has many friends in the States mentioned, as well as in Canada, where he spent some time as assistant to the Dominion Apiarist at Ottawa.

### H. B. Parks Resigns

H. B. Parks has resigned his position as apiculturist at the Experiment Station at College Station, Tex. Mr. Parks was for a time extension lecturer in beekeeping at the Texas Agricultural College, later taking the position at the Experiment Station. He is shortly to enter the employ of the Texas Honey Producers' Association at San Antonio. Mr. Parks has had a varied experience, having spent some time in Alaska, as well as being stationed in South Carolina and Missouri before locating in Texas. The Texas station has experimental apiaries in several localities, and a great deal of work under way. Texas beekeepers will regret having Mr. Parks leave his position as apiculturist, but since he is to remain in the employ of the co-operative organization, will still be in their service.

# THE EDITOR'S ANSWERS

We answer as many questions as space will permit, in order received. When stamp is enclosed, the editor will answer by mail. We now receive more questions than we can answer in the Journal.

### Eight-Frame Hive—Strong Colony

1. Is it possible that a small hive, such as an 8-frame Langstroth, would be the best in certain localities? Mr. P. Scheuring did not make this claim, but said he could make good with it, but others may succeed with larger hives. He tried the 10-frame but abandoned it.

2. I would like to know how many frames should be covered with bees in an 8-frame hive to be considered strong when taken from their winter quarters? When would you call it weak?

3. Does Wisconsin University give courses in beekeeping? How long does it take for a complete course?

4. How is the name "Dadant" pronounced?

WISCONSIN.

Answers.—1. The 8-frame hive would probably be best in a locality where the season was early enough and short enough to prevent the queen from developing her full laying capacity in time for the crop. We don't know of any such locality, but it may exist.

2. A strong colony, in an 8-frame hive, ought to have at least 6 spaces covered with bees at the end of the winter. It would be very weak if it covered only 3 or 4.

3. Yes. Write to H. F. Wilson, Madison, Wis., for details of course.

4. Pronounce it "Day-dent," accent on both syllables. That is not the French way, but we are all Americans, are we not?

### Paste—Balled Queen

1. Please give me a good receipt for a paste that will make the labels stick on glass and tin.

2. This spring I united several colonies on the Alexander plan. A few days ago one of the colonies showed unusual activity, so investigating, I found the lower queen out in front of the hive being balled, and the upper queen, a beautiful Italian, going about her business as if nothing happened. I liberated the balled queen and attempted to run her in, but the bees would not allow this, and would have nothing to do with their former queen. The queen was clipped about a week before, so she could not fly. To save the queen I introduced her to a nucleus and she seems to be working again. Can you give me any information on this?

MICHIGAN.

Answers.—1. We make paste with flour and water. Dilute the flour well, making a liquid about like thin cream. Then heat over a fire, stirring all the time to keep from burning. As soon as it begins to thicken, take it off. Thin labels stick well with this paste. Thick labels sometimes peel off. Some add a little honey while making the paste, to make it stick better. When a large amount of paste is needed it is cheaper to buy it of a manufacturer.

2. Your experience shows that bees will often refuse to have two queens in one hive, even if they are separated by an excluder. There is nothing strange in this. The strange thing is that bees often accept two queens, as it is against their instinct.

### Worthless Queen

We are two brothers, 13 and 14 years old. Have become interested in bees and finally bought two swarms. One was an old colony in a home-made hive. This one sent out two large swarms and a third small swarm. As near as we can tell, the first ones are O. K., but the third one has a lot of brood, and little honey. This one is on 6 frames in an 8-frame hive. The old parent colony has a lot of honey, but almost no brood. Evidently the queen is laying but little. Will you tell us how we can unite the two colonies for winter? The frames are not removable in the parent colony (as the combs are built so irregular) and they are not the same size as the standard hives.

NEW HAMPSHIRE.

Answer.—From your description, it is probable that the queen in the old hive is worthless, since you say the hive has but little brood. If the hive has plenty of honey, it may be well to kill its queen and unite the small colony with it. Drive the bees out of the old hive, find the queen and kill her. Then set the weaker colony with the brood on top of the old hive, or under it. By and by, when all its brood has hatched, you may remove the small hive and shake all its bees in front of the other. In order to get them to unite without fighting, it may be advisable to place a sheet of paper between the two hive bodies when you place one hive on top of the other. When you move the small colony, you will have to smoke and disturb them greatly so they may take notice of the fact that their hive is being moved to another spot. There is always a chance for the loss of some bees when you move them to a new spot.

### Moth Prevention

Here is my plan for taking care of extracting combs. I have been giving it a thorough test for years, and I know it to be a success. This season I have taken out combs in perfect condition that were put away three years ago.

My plan is to put them away in super hives, or other containers, alternating an empty frame with each comb, so as to not allow any two combs to com in contact. In tiering up the containers I use strips of wood (one-quarter inch square is sufficient), a piece across the frame at each end; and it is well to use them to start on. I do not allow any two containers to touch each other, nor the wall. The combs thus entilated and isolated from each other give the moths no chance to generate heat to start on.

Of course, the combs could be spaced without the empty frames, but it would be difficult to handle the container without the combs sliding together. So, to make sure, I keep a supply of empty frames.

A few times I have left some supers full of combs, thinking I would fix them, and then neglected to do it. I invariably lost the combs.

I want to emphasize the necessity of thoroughly isolating the combs and containers.

IOWA.

Answer.—The above method worked well for us when combs were kept in a repository where the temperature did not get high enough for the moths to keep warm without the generation of heat produced by their congregating together.—Editor.

## Excluders

I have several stands of bees, running for extracted honey, using an 8-frame hive with an excluder and a full depth of body, with full sheets of foundation for a super.

The bees do not seem to work through the excluder at all, as not any of the foundation above is drawn out. Have had three swarms come off in the last few days and can not understand why they do not work in the supers.

My bees are Italians and the hive bodies seem to be full of honey and brood, and yet the bees will not go above to work.

ILLINOIS.

Answer.—This shows that the excluder acts according to its name, not only on the queen and drones, but to a certain extent on the workers.

Try putting the super and excluder below the brood-chamber for 3 or 4 days. I believe the bees will start to work in those supers at once. Change them back to the top as soon as you find them at work in them.

## Double-walled Hives, Swarms, Etc.

1. Does a double-walled hive need shade?

2. How can you build up a nucleus (two-frame) to cover 10 frames, at least, at the beginning of winter, when wintered outside in a double-walled hive?

3. Does a colony hang out before swarming?

4. When you see a colony hanging out preparing to swarm, can anything be done to prevent it?

5. I am rather small to hive a swarm by liftiog the old hive off its place (12 years). Is there any other way to do it?

6. Is there any way to tell if a colony has swarmed?

7. Is there any use in my rearing drones to mate my queens when there are 150 hives about a mile and a quarter away that have some drones?

OREGON.

Answers.—1. A double-walled hive needs less shade than a single-wall, especially if it has also a double top, or a roof. The sun does not reach the interior so readily.

2. To build up a nucleus, if the season is not sufficient to enable them to fill up the hive, you can build them up by supplying them with full sheets of foundation from time to time, a comb of brood and honey from some strong colony, giving the colony thus deprived of a comb a sheet of foundation in a frame, to replace it.

3. Bees do not always hang out before swarming, neither do they always swarm when they hang out.

4. You can prevent a colony from swarming by dividing it, or by giving it room, ventilation, or by moving it from the stand and placing in its location a division or some nucleus which you want to strengthen. These methods do not always succeed, but if you follow them you will have but few swarms.

5. No need of moving a hive at all to gather a swarm. Cut the limb on which it hangs and carry it to the empty hive and shake the bees on a sheet or cloth near the entrance. Or, if the limb cannot be cut off, take an empty comb and place it near the swarm. In 9 cases out of 10 they will at once cover it, and you can then put them where you please.

6. If a colony has swarmed less than an hour previous, you will usually find young bees, that cannot yet fly, in the grass in front of it. If you get there too late for that, you will ascertain whether they swarmed by opening the hive. If you find few bees only, some queen cells and no queen, it will be a sure sign. If the hive swarmed several days previous, they will probably have a young queen not yet fertile and no eggs or young larvæ in the cells, but only sealed brood.

7. No need of your rearing drones if there are even only 50 colonies rearing drones within a mile. The probability is that your bees will rear enough drones anyway, even if you make no attempt at helping them to do it.

## Bees in House

About two weeks ago a swarm of my bees went into a knot hole in the weatherboards of my house and are in the partition. I would like to get them out as soon as possible without killing them, and get them into a hive. The knot hole is only two feet away from the door and five feet from the ground. Could I smoke them out by drilling a hole below and put an empty hive near the knot hole, or do you know of any other way?

NEW JERSEY.

Answer.—The very best way is to smoke the bees enough to frighten them, and take off enough of the weatherboarding to uncover the combs. By boring a hole below the place where the swarm has its combs, you might drive them out, but if they have room either above them or in another partition, you may not succeed in getting them all. You need especially to get the queen. By removing the weatherboards you get the combs, brood, honey and all. You might try to smoke them out first. But if they are, as we surmise, in the upper part of the space, the proper place for them to come out would probably be at the upper end of the space between the studding.

By the use of a good nail puller, you could get that weatherboarding off without damaging it to any extent.

## Moving to Argentine

Can bees be transported successfully from here to Argentine, and how should they be packed? I am going there and would like to take 6 nuclei or colonies. CALIFORNIA

Answer.—Bees can undoubtedly be transported successfully to Argentine. But had you not better first enquire whether they have bees there which you could buy cheaper than you can transport them?

Wait till fall, which is their spring season. Select some good average colonies, with old combs and a medium amount of honey. Too much honey would make the combs liable to breakage. Put a screen both in the bottom-board and the cover, using a wire cloth about 6 inches in diameter, well protected by cleats. Mark the hives "Handle with care, this side up; keep out of the sun." Have them travel with you, as much as possible. If they are not rearing brood they need no water. When Mr. Harbison brought his bees from New York to California he gave them no water, and succeeded well. They need to be kept cool, right side up, and with as little disturbance as possible.

## Cork Vs. Leaves for Packing

In your January, 1919 number appears a table of insulation values as may be applied to beehives. Strange to say, granulated cork does not appear to have been a factor in the experiment which resulted in the table of values. Could you ascertain just where it would appear in the scale? I am making a couple of Jumbo hives to be packed 2 inches around and below with granulated cork. If, however, forest leaves are nearly as good as the cork I would, on account of the price, use them instead. Cork is 15c per pound. ONTARIO.

Answer.—I would be inclined to favor granulated cork, when compared to forest leaves. However, the table to which you refer gives the following insulating values:

| | |
|---|---|
| Dead air space | 18 |
| Corrugated cardboard | 33 |
| Planer shavings | 34½ |
| Mineral wool | 35½ |
| Forest leaves | 41 |

Since forest leaves are shown as ahead of either planer shavings or mineral wool, I am tempted to consider them equal to granulated cork. In the absence of a positive test, and when we consider their low cost, I would take them in preference to anything else. Anyone who has seen how long it takes for the ground to freeze under a thick coat of dry forest leaves will have faith in them as a non-conductor.

## Requeening

When requeening is necessary before July 1, why cannot a queen-cell be allowed to mature, destroying the old queen just before the young queen emerges?

Or take the frame with the queen-cell and place in an empty hive, and after this queen is mated destroy the old queen and add all brood and bees to the young queen?

NEW YORK.

Answer.—Either way is good. But you must be sure that the cells are protected so that the old queen cannot destroy them. No matter how you rear a young queen, it is always better to have her ready before killing the old one. Be sure and have your young queens reared with plenty of warmth and plenty of food. That is the only way to get healthy, active queens.

## Death From Bee Sting

On June 28, about 3:30 p. m., Hazel V. Kephart, 10 years old, was stung on the toe while playing on the lawn with other children, and in 30 minutes was dead. She became unconscious in 10 minutes after being stung. A doctor was with her in about 6 minutes after being called, but no known method could revive her.

Have beemen any record of a parallel case?

WASHINGTON.

Answer.—No, we have never read of anything so prompt and so dreadful. The child must have been of a very peculiarly nervous disposition.

## Wintering—Shaking

1. I keep my bees in a cellar with cement floor, and the cellar seems to be quite dry; still a little moisture collects in them by spring. Would it be advisable to place some absorbing material on top of the frames, or what would you suggest?

2. I shook one of my swarms last spring, and as a result got four supers of section honey, while the outer swarms produced only one or two. Shaking them makes them a little cross, though. Wouldn't it be just as easy and less annoying to both the bees and operator, to drum the bees into an empty hive placed above the swarm? I should think this should work just as well as the "shook method," and would not this method be all right in treating for foulbrood?

3. Are not bees always a good deal more cross in the fall than at any other time? Mine always are, although I watch for roboing.

4. This year the honey flow lasted about two months. Is not such a season best for the production of comb honey?

5. Is it all right to winter "shook swarms" and hives very strong in bees in one hive-body, or would you advise two? I keep my bees in a cellar.

SOUTH DAKOTA.

Answers.—1. Perhaps your cellar does not have enough ventilation. Yet it requires very little to winter bees safely, in a dry cellar. Perhaps the temperature is a little too low. Some very good beekeepers say that if the cellar is all below the frost line there will be very little condensation of moisture. Try to pile your hives with only a light quilt over the frames, without a cover and with full opening at the bottom. Let us know how you succeed with this method. We do not think it necessary to use absorbents in the cellar.

2. Are you sure that the shaking was the cause of getting so much surplus? In that case you evidently had the bulk of the bees just in time for the harvest and not too many after that. You can drum the bees up into another hive, but for my part, I believe I would rather shake than drive. I would consider it too slow in treating for foulbrood.

3. Yes. They seem to realize that the season is nearing its end and to be afraid of mischief on the part of intruders.

4. Yes, it gives them more time to build comb.

5. Whether to winter in one or two hive-bodies depends upon the size of the hives. But Dr. Miller was very successful in wintering in only one body with 8-frame hives. They usually have enough honey for winter, especially if placed in the cellar.

## DR. MILLER'S LAST ANSWERS

Since Dr. Miller's death, Mrs. Miller has returned to us a few letters with his answers. He left some unfinished work in his typewriter when he was taken ill for the last time. The following answers will be the last from Doctor Miller.

### Winter Problems

1. My hives face southeast, away from the prevailing winds of winter. They are located high and are exposed to severe west and north winds during the winter. It is not possible to move them to the cellar, which is heated; neither is it possible to move them to a less exposed position. What would be the best way to winter the colonies under the circumstances? The temperature frequently falls to zero and below.

2. Would you advise leaving the wall space as a dead air space, or should I pack the space with some material?

3. Should the small ventilator holes be closed in the cover above the chaff tray?

4. What would be the best way to feed these colonies should it become necessary to do so?

5. Two of the colonies are small. Would it be advisable to combine them in one hive? If so, how could they be combined to give them the benefit of the chaff tray when each of the two colonies has a queen which would have to be kept separate from the other one in some manner? OHIO.

Answers.—1. In southern Ohio a double-walled hive ought to give enough protection to stand out in the open. Although you have some below-zero weather, it is not for long, and it is the continuous cold weather that's hard on bees.

2. Use packing.

3. Probably better leave them open.

4. Don't think of feeding in winter, but make sure that they have enough stores while the bees are still flying. It is not important what kind of feeder you use, but a popular way is to use the friction-top honey pails with holes punched in the covers, reversing the pails.

5. Have a queen-excluder between the two hives, and have chaff tray only over the upper one. If very weak, unite into one, sacrificing one of the queens.

### A Queer Experience

I started a nucleus about three weeks ago with two frames of brood and two queen-cells from a colony that had swarmed. One queen came out and the other cell was destroyed. After about 12 days the queen did not lay. I found her outside, dead. I then gave them a piece of brood from another colony and they started 6 queen-cells about 9 days ago. Today, August 15, I found both combss full of eggs, as I never saw a comb before, in fact, as much as 15 eggs in some cells and brood 3 to 5 days old, but could not find a queen. Now where did those eggs come from. They could not have been laying workers, as they were not queenless long enough to get them. The eggs are compact, too, just as if a good queen laid them. The bees are in a small hive, just large enough for two combs. MINNESOTA.

Answer.—As nearly as I can guess from the data given, I should say that laying workers are the culprits in the case. You say they were not queenless long enough. But bees are freaky, especially at doing something bad, and don't always follow the rules. Besides, they were queenless to all intents and purposes from the time you formed the nucleus, for the young queen or queens they had don't count, as they probably never laid; at least they never laid eggs that counted. The plurality of eggs in a cell is not positive proof of laying workers, but leans in that way. The regularity of eggs is sometimes just as great as with a normal queen, especially if there are no drone-cells present.

### Granulation of Honey

Would you be kind enough to let me know how they heat extracted honey so it won't granulate? SOUTH DAKOTA.

Answer.—I'm sorry to say I don't know of any satisfactory way to treat extracted honey so it will not granulate. But you can do as I did. Put on each package instructions for liquefying it, taking it for granted that it always will granulate. Doing that way I never had a complaint.

### Moving Bees

I have just bought four hives of bees in 10 frame hives with extracting supers (shallow). I have been trying to close the hives up at night when the bees are all in. The bees have never gone in enough these hot nights to close them up. Please tell me how to move the hives half a mile and get all the bees. MISSISSIPPI.

Answer.—Give ventilation abundantly by every means you can. Raise the hive and raise the cover. Sprinkle or spray the hive and the bees until the bees go in. But don't overdo the business, for if you throw too heavy a lot of water on them the bees will just stay in a wet mass without stirring. Just spray lightly and patiently on the edge of the cluster and drive them. But after you have fastened them in and moved them, that evening or early next morning, you will find that some of the bees for the next day or two will return to the old place if it is not more than a mile away. It will help against this if you set up a board in front of the entrance, and if it is in the morning, before opening the entrance pound on the hive until the bees set up a roaring. In spite of this, some may go to the old stand, so set a hive to deceive them, putting in the hive a comb with a little honey in it, and possibly some brood, although a dry comb may do. Then take these bees to the new place, repeating if necessary.

### How to Know a Good Queen

1. How can you gauge or judge the quality or desirability of a queen?

2. How can a "failing queen" be identified?

3. Should anything be done in the fall to induce brood-rearing to ensure a strong colony?

4. What improvement in one's bees may be expected as a result of always making increase from the best queen? Is there anything of value published on methods of improving bees by selection or breeding? ILLINOIS.

Answers.—1. A queen is judged much as a cow is judged—by her work. Only in the case of the queen she is judged not so much by her own direct performance as by the performance of her worker progeny. Other things being equal, the colony which yields the largest amount of honey has the best queen in the apiary.

2. A failing queen will show patchy work. Instead of having the comb evenly and compactly filled with worker-brood, there will be more or less empty cells mixed in with the worker-brood, and especially she will show drone-brood in worker-cells. These cells, when sealed, instead of showing a plain, flat surface, as normal worker-brood should, will look like a lot of little marbles because of the rounded form of the capping of each worker-cell that has drone-brood in it. I know it is commonly advised to replace a failing queen, and in general it may be advisable, but in my own practice I generally leave it to the bee to supersede their queen when in *their* judgment it should be done, and generally find my confidence well placed.

3. With a good strain of bees and in a good locality, it is unnecessary to do anything. If, however, the flow of honey ceases early enough to stop the rearing of brood long before the weather becomes cool—say in August in your locality—then it may be advisable to resort to light and continuous feeding, so as to induce the queen to lay and have a stock of young bees for winter. A young queen is likely to lay later than an old one.

4. The improvement to be expected depends on what you start with. If you start with bees that are hustlers, your best efforts at improvement will be rather limited in results, but still may pay well. Start with bees that are very poor, introduce a queen of the best kind and continue to breed from the best, and in a very few years you may quadruple your annual take of honey.

I know of no monogram on the subject, but much will be found scattered among apicultural literature,and among back numbers of the different bee journals. Not very long ago the subject was especially discussed in two different numbers of the American Bee Journal.

### Robbing, Swarming, Etc.

1. While yesterday and the day before, giving colonies the Demaree, there evidently was considerable robbing—to some extent dead bees in consequence. A day after all seems re-quieted. Is this robbing serious enough so that it should influence one? How do the most enterprising beekeepers act in such situation as just portrayed?

2. On the 24th of July I met with a few comb-honey colonies that this season have not shown any symptoms of swarming, which were in about as fine a condition as is possible—full of brood in all stages, eggs and bees. Would you have removed some of the frames of capped brood, or trusted to good luck that as to non-swarming they would continue as thus far?

3. As to the Demaree, where is it best to place frames with eggs, under or above excluder? PENNSYLVANIA.

Answers.—1. I'm not sure exactly what the most enterprising beekeepers would do in such a situation, but I would hardly expect to do much Demareeing at a time when robbing would result in dead bees. For, with proper care on the part of the beekeeper, there is not likely to be robbing at a time when bees need treatment to keep them from swarming. If they have gone to the last of July without needing any treatment, and there is at that time so little yield that they are bad about robbing, it would hardly seem that they would be very strongly bent on swarming. But having begun, I think I should crowd it through.

2. I should most likely do as you did—indeed, most certainly. So long as a colony of its own accord shows no tendency toward swarming, nothing better can be done than to let it alone and be thankful.

3. Except one frame with perhaps not much brood, all brood should go above the excluder, so that would put all eggs above except in that one frame.

## HONEY PRODUCERS' LEAGUE

There will be a meeting of the executive committee and friends of the National Honey Producers' League in connection with the Chicago Northwestern Beekeepers' convention at the Great Northern Hotel at Chicago on December 6 and 7. The new organization is just now at a critical stage and with sufficient support from the beekeepers will achieve great success. All beekeepers interested in a live National organization are invited to meet with the executive committee and help formulate plans for the future.

## THE BEEKEEPERS' ITEM

The Beekeepers' Item announces a raise in subscription price from 50 cents to one dollar per year, to take effect with the beginning of the new volume. The size will be increased to 32 pages. When it is considered that everything else has increased in price from 100 to 500 per cent, subscription rates of bee publications are still extremely low. Here is one place where the consumer gets more than he pays for.

Although the Item deals primarily with Texas beekeeping, it is of interest to beemen everywhere. It is an interesting and newsy publication that is read with much interest. As a rule, when one visits a wide-awake beekeeper he is found to be a careful reader, not only of one good magazine relating to his special trade, but several. The cost of subscription is so small in proportion to the benefits received, that a beekeeper who takes his business seriously will get suggestions worth many times the cost from any well edited bee publication.

## SWEET CLOVER

Eber Lewis, Superior, Neb., close to the north line of Kansas, with 160 acres of sweet clover, sold $3,335 worth of seed, after pasturing 200 head of cattle on it all season. L. W. Benson says that land is now worth $50 an acre more than it was before the sweet clover was put upon it.

## Chicago Northwestern Association

The Chicago Northwestern Beekeepers' Association will hold its annual convention on Monday and Tuesday, December 6 and 7, at the Great Northern Hotel, Chicago. An unusually good program is being arranged and many prominent beekeepers from a number of States have signified their intention of being present. A copy of the program will be mailed upon application to the Secretary.

JOHN C. BULL,
Secretary-Treasurer.

## Michigan's Efficiency

If any of our Michigan beekeepers fail to secure the "Beekeeper's Letter," published monthly by B. F. Kindig, of the Michigan Department of Entomology, they are losing a treat. Those letters are full of life and indispensable information.

## A NEW BEE BOOK

**"Dadant's System of Beekeeping"**
Price $1.00.

**Statement of the Ownership, Management, Circulation, Etc.,** required by the Act of Congress of August 24, 1912, of **American Bee Journal,** published monthly at Hamilton, Illinois, for November, 1920:

STATE OF ILLINOIS, } ss.
COUNTY OF HANCOCK. }

Before me, a Notary Public, in and for the State and County aforesaid, personally appeared V. M. Dadant, who having been duly sworn according to law, deposes and says that she is the Business Manager of the American Bee Journal, and that the following is, to the best of her knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in Section 443, Postal Laws and Regulations, printed on the reverse side of this form, to-wit:

1. That the names and addresses of the publisher, editor, associate editor, managing editor and business managers are:

Publisher, American Bee Journal, Hamilton, Ill.
Editor, C. P. Dadant, Hamilton, Ill.
Associate Editor, Frank C. Pellett, Hamilton, Ill.
Managing Editor, M. G. Dadant, Hamilton, Ill.
Business Manager, V. M. Dadant, Hamilton, Ill.

2. That the owners are:

C. P. Dadant, Hamilton, Ill.
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V. M. Dadant, Hamilton, Ill.
Leon Saugier, Hamilton, Ill.
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M. G. Dadant, Hamilton, Ill.
Jos. Saugier, Hamilton, Ill.

That the known bondholders, mortgagees and other security holders owning or holding 1 per cent or more of the total amount of bonds, mortgages or other securities, are: None.

(Signed) VALENTINE DADANT.

Sworn to and subscribed before me this 10th day of October, 1920.

MARY McCOY, Notary Public.
My commission expires January 17, 1924.

## CLASSIFIED DEPARTMENT.

Advertisements in this department will be inserted for 5 cents per word, with no discounts. No classified advertisements accepted for less than 35 cents. Count each initial or number as one word.

Copy for this department must reach us not later than the 20th of the month preceding date of issue. If intended for classified department it should be so stated when advertisement is sent.

### BEES AND QUEENS

SEE ATWATER'S NEW CLASSIFIED HONEY ADVT.

DAY-OLD QUEENS—Superior improved Italians, mailed in safety introducing cages. Safe arrival and satisfaction guaranteed anywhere in the U S. and Canada. Send for circular. Order in advance. Prices, April to October, 1, 75c; 12, $7.20; 100, $60.
James McKee, Riverside, Calif.

A. I. ROOT STRAIN of leather-colored Italians that are both resistant and honey gatherers. The queens and bees need no recommendation for they speak for themselves. Untested, one, $1.50; six, $8.40; twelve, $15. Select untested, one, $2; tested, one, $2.50; select tested, one, $3. For larger amounts write,
A. J. Pinard, Morgan Hill, Calif.

PURE ITALIAN QUEENS—Golden or leather colored, packages and nuclei; 1 untested queen, $1.50; 6, $7.50; 12, $13.50; 50, $55; 100, $100; virgins, 50c each; packages, 24 and under, $2.25 per pound; 25 and over, $2 per pound; nuclei, 1-frame, $4; 2-frame, $6; 3-frame, $7.50; queens extra. One-story 10-frame colony with queen, $12.
Golden Star Apiaries,
R. 3, Box 166, Chico, Calif.

BEES AND QUEENS from my New Jersey apiary J. H. M. Cook,
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FOR SALE—10 hives of bees in 10-frame standard hives, with 1 section super on each, $10; and 10 sectional hives, $8, with one super. Plenty winter stores. L. A. Schwab,
1340 Merchant St., St. Louis, Mo.

PACKAGE BEES AND PURE ITALIAN QUEENS—Booking orders now for spring delivery. Circular free. J. E. Wing,
155 Schiele Ave., San Jose, Calif.

FOR SALE—15 colonies Italian bees, 14 comb-honey supers, 5 brood supers, 40 brood-combs, 15 cases cans, $175 if taken at once.
5947 S. Kolmar Ave., Chicago, Ill.

FOR SPRING DELIVERY—1 good Italian queen, 1 frame emerging brood, 1 pound live bees, price complete $6.50. Queen introduced, mated, laying enroute; loss in transit replaced if noted on express tag by agent; no disease in State. References given. Orders booked, May delivery, one-fifth cash
Jess Dalton, Bordelonville, La.

NUCLEI for 1921—We beg to advise those who intend to purchase nuclei to enter their orders early in order to be certain of being able to obtain them, as the demand greatly exceeded the supply during the past season, and the majority of late orders went unfilled. We are now booking orders for three-frame nuclei of Italian bees, with Italian queen, at $6.50 Hybrid bees, with guaranteed pure Italian queen, at $5.50. Terms, one-third down with order. No disease, safe arrival and satisfaction guaranteed. Irish Bros.,
Doctortown, Ga.

FOR SALE—Three-banded Italian queens; untested, $1.25 each; 6, $6.50; 12, $12. Select untested, $1.50 each. Satisfaction guaranteed.
W. T. Perdue & Sons,
R. No. 1, Fort Deposit, Ala.

FOR SALE—Goldens that are true to name. Select untested, one, $1.50; 6, $7.50; 12, $13.50; 50, $55; 100, $100.
Garden City Apiaries, San Jose, Calif.

FOR SALE—Large hardy, prolific queens, 3-banded Italian only. Pure mating and safe arrival guaranteed. One queen, $1.30; 6, $7.50; 12, $13.50; 100, $110.
Buckeye Bee Co., Box 443, Massillon, Ohio.

BOOK YOUR ORDERS for QUEENS now—Goldens, $2; tested, $3; banded, $1.50; tested, $2.50; six or more 10 per cent less.
Clover Leaf Apiaries, Wahoo, Neb.

FOR SALE—Hardy Italian queens, $1 each
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1920 PRICES for "She Suits Me" queens. Untested Italian queen, from May 15 to June 15, $1.50 each. After June 15, $1.30 each; $12.50 for ten; $1.10 each for 25 or more.
Allen Latham, Norwichtown, Conn.

FOR SALE—After April 15, our golden Italian queens, untested, one $1.50 or $15 per doz.; select untested, one, $1.75 or $18 per doz.; tested, $3 each. Safe arrival guaranteed. Tillery Bros.,
R. 5, Georgiana, Ala.

"QUALITY" THREE-BANDED ITALIANS from excellent stock; untested queens, 1, $1.50; 6 for $7.50; 12 for $13.50; 50 for $55; 100 for $100. N. J. James,
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BEES BY THE POUND, ALSO QUEENS—Booking orders now. Free circular gives prices, etc. See larger ad elsewhere.
Nueces County Apiaries, Calallen, Texas,
E. B. Ault, Prop.

### HONEY AND BEESWAX

SEE ATWATER'S NEW CLASSIFIED HONEY ADVT.

15,000 lbs. fancy, choice, extra well ripened, white clover extracted honey, in new 60-lb cans, at 20c. Edw. A. Winkler, Joliet, Ill.

FOR SALE—Clover and buckwheat honey at reduced prices, any style container. A post card will bring our quotations.
The Deroy Taylor Co., Wayne Co.,
Newark, N. Y.

FOR SALE—Clover extracted honey. $15 per 60-lb. can. J. I. Stimpson, Houston, Minn.

FOR SALE—Finest Michigan raspberry, basswood and clover honey in 60-lb. cans, 25c per pound. Free sample.
W. A. Latshaw Co., Clarion, Mich.

FOR SALE—Clover and buckwheat honey in new 60-lb. cans. 2 cans per case.
Bert Smith, Romulus, N. Y.

FOR SALE—Extracted honey in 60-lb. cans.
Wesley Koch, Kingsley, Mich.

FOR SALE—Honey, very fine quality extracted, one 60-lb. can $15, two 60-lb. cans $29. Fancy and No. 1 comb, 24 sections in case, $7; 6 and 9 cases in carrier.
Wm. Glatter, Sartoria, Neb.

HONEY—Supply your customers, finest alfalfa-clover honey, extra strong cases, any quantity, $24 case of two 6-gal. cans; $13.50 case of six 10-lb. pails; $14.10 case of 12 5-lb. pails, all f. o. b. here. Cash with order. Reference, First National Bank here. Sample 20c.
E. F. Atwater, Meridian, Idaho.

FOR SALE—Choice clover extracted honey in car lots. If interested write for sample.
J. D. Beals, Oto, Iowa.

FOR SALE—Choice clover extracted honey, $27.50 per case of two 60-lb cans. Selected No. 1 comb honey, 24 sections to the case, 8 cases in a carrier, $7.50. Prices f. o. b. here.
J. D. Beals, Oto, Iowa.

FOR SALE—Very choice grade of sweet clover extracted honey.
Thos. Atkinson, Cozad, Neb..

FOR SALE—New crop clover extracted honey, two 60-pound cans to case, $30 per case; 5-pound pails, $1.50 each, packed 12 pails to case, or 30 to 50 to barrel.
H. G. Quirin, Bellevue, Ohio.

WANTED—Extracted honey. State how packed. Send sample, lowest cash price.
P. Outzen, White Bear Lake, Minn.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendering. Fred W. Muth Co., 204 Walnut St., Cincinnati, Ohio.

WANTED—Comb and extracted honey.
The L. H. Snider Apiaries, Auburn, Ind.

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SEE ATWATER'S NEW CLASSIFIED HONEY ADVT.

FOR SALE—A 20-acre farm with three-quarters acre ginseng and 200 colonies bees; or will sell farm and rent bees and ginseng on shares. L. Francisco, Dancy, Wis.

FOR SALE—14 apiaries, one or all. Fine climate, health and stone roads, American church and school. Last season's crop 44 tons. M. C. Engle, Herradura, Cuba.

FOR SALE—"Superior" Foundation (Weed process). Quality and service unexcelled.
Superior Honey Co., Ogden, Utah.

FOR SALE—Cedar or pine dovetailed hives; also full line of supplies, including Dadant's foundation. Write for catalog.
A. E. Burdick, Sunnyside, Wash.

FOR SALE—Southern California ranch of 216 acres of land, 16 acres of bearing peach trees, early and canning varieties; 19 acres under ditch; good citrus land; 25 acres grain land, balance 157 acres pasture with good spring; 90 colonies of bees in 9 and 10-frame two-story hives, good Italian stock, average 120 pounds per colony, spring count 1920. Plenty of forest reserve joining, making a good bee range. Small house, sheds and honey house, four miles from town and railroad, one mile from graded school. Price $10,000, half cash, terms. Address owner, Chas. F. Schnack,
Escondido, San Diego Co., Calif.

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ROOT'S GOODS at Root's prices.
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FOR SALE—To reduce stock, crates of 96 1 gallon cans, with bails and 3-inch screw caps, at $17.50 per crate, f. o. b. Grand Rapids.
A. G. Woodman Co., Grand Rapids, Mich.

FOR SALE—One-pound jars in two doz. cases, ten cases or more at $1.75 per case, f. o. b. factory.
A. G. Woodman Co., Grand Rapids, Mich.

FOR SALE—Good second-hand double-deck comb honey shipping cases for 4¼x4¼x1⅞ sections, 25 cents per case, f. o. b. Cincinnati; terms cash with order.
C. H. W Weber & Co.,
2146 Central Ave., Cincinnati, O.

FOR SALE—Good second-hand empty 60-lb. honey cans, two cans to the case, at 60c per case, f. o. b. Cincinnati. Terms cash with order.
C. H W Weber & Co.,
2146 Central Ave., Cincinnati, O.

SEND us a list of goods wanted and will quote you lowest prices. We are the money-saving house. Price list free. Try us.
H. S. Duby & Son, St. Anne, Ill.

## SITUATIONS

SEE ATWATER'S NEW CLASSIFIED HONEY ADVT.

WANTED—One or two good queen-rearing men to begin work February 15, 1921.
Nueces County Apiaries, Calallen, Texas.

WANTED—By a large and financially responsible corporation operating in California and Nevada, several experienced beemen and several helpers. Good wages and permanent position 12 months a year. Financial references furnished if desired. Give age, experience and full particulars in first letter. Apply, W. H. Corporation, care American Bee Journal, Hamilton, Ill.

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SEE ATWATER'S NEW CLASSIFIED HONEY ADVT.

WANTED—Beeswax. At present we pay 36c per pound in cash and 38c in trade for clean, yellow wax, delivered Denver.
The Colorado Honey Producers' Association,
Denver, Colo.

WANTED—Honey extractor, good one; also pump guns. James Wheeler, Maroa, Ill.

WANTED—Dadant beehives. What have you?
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WE BUY HONEY AND BEESWAX. Give us your best price delivered New York. On comb honey state quantity, quality, size, weight per section and sections to a case. Extracted honey, quantity, quality, how packed, and send sample. Charles Israel Bros. Co.,
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WANTED—Buckwheat extracted honey; send sample and quote lowest cash price.
Ed. Swenson, Spring Valley, Minn.

WANTED—Extracted honey, also comb honey, beeswax and maple syrup. State how packed.
Paul Thomae,
1131 3rd St., Milwaukee, Wis.

HONEY WANTED in car load lots or less. Send samples and price.
Chris Bahr, Cathay, N. D.

WANTED Your order for "Superior" Foundation. Prompt shipments at right prices.
Superior Honey Co., Ogden, Utah.

WANTED—Your old combs, cappings and slumgum to render into beeswax. We get enough more wax with our well equipped presses to pay for our work.
Dadant & Sons, Hamilton, Ill.

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SEE ATWATER'S NEW CLASSIFIED HONEY ADVT.

FOR SALE—22-calibre Remington automatic rifle; good condition, $21.
Thos. H. Cordner, Rt. 7, Sparta, Wis.

GRANULATED HONEY SLIPS—100, 20c.
Dr. Bonney, Buck Grove, Iowa.

FOR SALE—Seeds of climbing milkweed, Gonolobus Laevia, or blue vine. Six pods mailed to any address upon receipt of $1.
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FOR SALE—Silver grey Dorkings; or will exchange for Italian bees, some choice birds from our leading breeds. Packages considered.
Penova Farm, Rt. 2, East Liverpool, Ohio.

**FOR SALE**

**IF YOU WANT THE CHEAPEST, BUY THE BEST**

I am prepared to furnish for the season of 1921 twenty-five hundred two and three nuclei of my bright 3-banded Italian bees, headed with young, vigorous queens. These bees are free from disease and safe arrival guaranteed. Hoffman frames wired and on full sheets of foundation; very few combs over two year sold. I am booking orders now, with first payment to be made February 1, 1921, unless purchaser wishes to make a payment with order. Write for prices and get your orders in early.

**A. B. MARCHANT, Jesup, Ga.**

**Reference: Merchants and Farmers Bank of Jesup.**

**"Everything in Bee Supplies"**

**"SUPERIOR" FOUNDATION**

**HONEY CANS**

We are at your service. Beeswax wanted at top market price.

**SUPERIOR HONEY CO., Ogden, Utah**

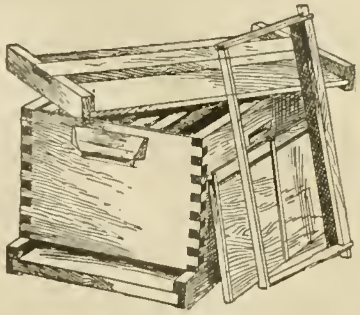
**(Manufacturers of Weed Process Foundation)**

# PLEASING THE BEES—AND YOU

WE humans appreciate our homes—the finer the homes the more comforts and conveniences we put into them.

The bee-hive is both a home and a work shop. We're wondering just how much bees enjoy good homes.

Our business for over forty years has been to turn out the best bee-hives and bee supplies. We want both bees and beekeepers to be satisfied with **"falcon"** goods. That's what brings home the honey.



**"Falcon" bees and supplies are guaranteed to give satisfaction. Send for red catalogue.**

**W. T. FALCONER MFG. CO.,** Falconer (Near Jamestown) N. Y., U. S. A.

*"Where the best Beehives come from"*

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## TIN CANS AND GLASS JARS

We have been fortunate enough to secure a fresh supply of all kinds of tin cans and glass jars for our customers.

The cases for two five-gallon cans are of the best. Made of three-eighths inch lumber, with seven-eighths inch heads, and the heads of the boxes are cleated to make the very strongest package possible. We recommend them as being the very best on the market.

Friction top cans in any kind of case you may require, 2½-lb., 5-lb., 10-lb., in cases of 6, 12. 24, 50 and 100.

We handle 6-ounce jelly glasses, 2 dozen to the case.

We also call your special attention to our 16-ounce screw-cap jars. A tall package that is a favorite with everyone who has used or seen it. These are packed 2 dozen in a case. We can recommend them most highly.

Write today for our prices on all these cans and jars. They will interest you.

Be sure to ask, also, for our honey label catalog.

**DADANT & SONS, Hamilton, Ill.**

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## NOTICE

In our plans to make the equipment at Council Bluffs absolutely up-to-the-minute and complete in every way, so that we can serve western beekeepers even more promptly and completely, we are now installing an AIRCO FOUNDATION mill. We hope to be turning out that famous and supreme foundation on our own mills in a few weeks. And we are going to use great quantities of wax in the process. Send us your combs or your rendered wax, and we will be glad to work it into AIRCO on trade basis, or remit cash if you prefer. We are paying top market prices, both in trade and cash. Let us send you a shipping tag, and quote on your next season's need in foundation.

**AIRCO and the A. I. ROOT CO.**

**COUNCIL BLUFFS, IA.**

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## QUEENS

**SELECT THREE-BAND**

**H. S. FOSTER, Columbia, Tenn.**

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ATTENTION, PACIFIC NORTHWEST BEEKEEPERS!

We handle a full line of supplies for beekeepers, including **Italian Queens.** Write us your requirements and for our Catalog A. It's **free.**

**SPOKANE SEED CO.,**
906 First Ave. Spokane, Wash.

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| American Bee Journal one year | $1.50 |
| Beekeeper's Item one year | 1.00 |
| Both one year | 2.00 |

American Bee Journal,
Hamilton, Illinois.

**HONEY** **WANTED** **HONEY**

Send us a sample of your honey if extracted, state how put up and your price. We are also buyers of comb, can use unlimited quantities if quality and price are right.

*We remit the same day goods are received*

**C. H. W. WEBER & CO., Cincinnati, Ohio**

**The Diamond Match Co.**
(APIARY DEPT.)
MANUFACTURERS OF
**Beekeepers' Supplies**
**CHICO, CAL., U. S. A.**

**Dadant's incomparable Foundation is always kept in stock. Western Beekeepers can be supplied advantageously**

BEEKEEPERS, wherever they may be located, before deciding where to obtain supplies, should write to The Diamond Match Co. for prices, and for their Beekeepers' Supply Catalogue.

This Company are the largest manufacturers in the world who make Bee Supplies. They own their own timber lands, mills and factories, and supply goods direct from the tree to the beekeeper.

Full advantage of this low cost of production is given to the purchaser.

The Apiary Department (which is in charge of experienced supply men, who are also practical beekeepers) maintains a constant excellence of product and offers unsurpassed service.

**The Diamond Match Co.**
Apiary Department CHICO, CAL., U. S. A.

CHARLES MONDENG
Bee Keepers' Supply Mfg. Plant.
CHARLES MONDENG
BEE KEEPERS SUPPLIES

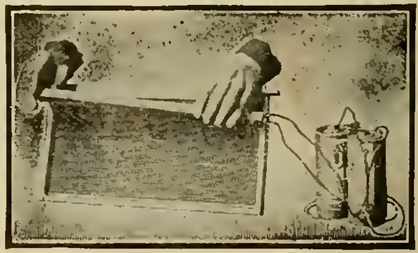
**BEE SUPPLIES**

The largest and oldest Bee Supply manufacturer in Minnesota can offer you BEE WARE that will keep that "satisfied smile" on your face. Excellent quotations given on frames, spacing or unspacing. Write to MONDENG about hives and supers. Made of polished white pine.

A word to the wise is usually—RESENTED?
Send for my 1920 Catalog and Price List.
LOOK for the best bargains I've presented.

**Will take your Beeswax in Trade at Highest Market Price**

**CHAS. MONDENG**
**159 Cedar Lake Road** **MINNEAPOLIS, MINN.**



**ELECTRIC IMBEDDER**
**Price without Batteries $1.50**
Not postpaid.

Actually cements wires in the foundation. Will work with dry cells or with city current in connection with transformer. Best device of its kind on the market.

For sale by all bee supply dealers

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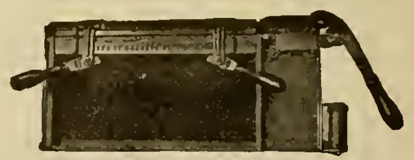
Thirty years' experience in making everything for the beekeeper. A large factory specially equipped for the purpose ensures goods of highest quality. Write for our illustrated catalog today.

**LEAHY MFG. CO., 90 Sixth St., Higginsville, Mo.**
or J. W. ROUSE, Mexico, Mo.



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**C.O.BRUNO NAILING DEVICE**
*Made for the Huffman Brood Frames.* A combined Nailing, Wiring and Wedge Clamping Device. Has been tried and is guaranteed to do accurate work.
PRICE $7.50
Complete directions for operating are furnished with each device.
Manufactured by C. O. BRUNO
1413 South West Street, Rockford, Illinois

# MARSHFIELD GOODS

## BEEKEEPERS

We manufacture millions of **sections** every year that are as good as the best. The **cheapest** for the **quality; best** for the price. If you buy them once, you will buy again.

We also manufacture **hives, brood-frames, section holders** and **shipping cases.**

**Our Catalog is free for the asking**

**MARSHFIELD MFG. CO., Marshfield, Wis.**

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We have in stock an over supply of the following sizes and are offering them at a big reduction—*while they last.* These sections are of a very good grade and mostly standard sizes. For lack of warehouse room, we are sacrificing them at the following low prices:

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| No. 2—3⅝x5x1½, plain or no beeway | 9.00 |
| No. 2—4x5x1 7-16, plain or no beeway | 9.00 |
| Mill Run, 4x5x1 7-16, plain or no beeway | 9.70 |

The above prices are net, cash with order. Sold in lots of not less than 1,000.

We are well prepared to fill all orders for Bee Supplies promptly. Send us your inquiries and we will be pleased to quote you our prices. Send us your name and address and receive our next season's catalog and price list when same is published.

**AUGUST LOTZ COMPANY, Boyd, Wisconsin**

# BEE SUPPLIES

We are prepared to give you value for your money. Our factory is well equipped with the best machinery to manufacture the very A-best supplies that money can buy. Only the choicest material suitable for bee hives is used. Our workmanship is the very best. Get our prices and save money.

## Eggers Bee Supply Mfg. Co.

Incorporated

ROUTE 1, EAU CLAIRE, WIS.

## ITALIAN QUEENS

The Old Reliable Three-Banded Italians. The best allround bee to be had. Queens ready to mail April 1. Will book orders now. Will guarantee safe arrival in United States and Canada. Prices for April and May:

Untested,, $1.50, 6, $8; 12, $15
Tested, $2.25; 6, $12; 12, $22.
Select tested. $3 each.

Descriptive circular and price list free.

**JOHN G. MILLER,**
723 C Street, Corpus Christi, Texas.

## PORTER BEE ESCAPE SAVES HONEY TIME MONEY

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BEE ESCAPE
PATENTED

For sale by all dealers.
If no dealer, write factory
**R. & E. C. PORTER, MFRS.**
**Lewistown, Illinois, U. S. A.**
(Please mention Am. Bee Journal when writing)

Send for Catalogue of Honey Labels and Stationery.
American Bee Journal

## HONEY FOR SALE

We have New York State light honey, 2 60-lb. cans in a case. Price on application.

**I. J. STRINGHAM, Glen Cove, N. Y.**
**NASSAU. CO.**

## WESTERN BEEKEEPERS!

We handle the finest line of bee supplies. Send for our 68-page catalog. Our prices will interest you.

**The Colorado Honey Producers' Association, 1424 Market St., Denver, Colo.**

Write for Price List and Booklet descriptive of

**HIGH-GRADE**
**Italian Queens**

**JAY SMITH**
**Route 3**
**Vincennes, Ind.**

**DADANT SYSTEM OF BEEKEEPING**

**BY C. P. DADANT**

In this little book the author gives a pleasing account of his experience in honey production for more than half a century. He describes the many experiments conducted by Charles Dadant and his descendants in the Dadant apiaries.

The Dadants have been engaged in the production of extracted honey on a commercial scale for many years. More than 60 tons of honey have been produced in their apiaries in a single year by the Dadant system of beekeeping.

This book is worth several times its price to any beekeeper with a dozen colonies. The Dadant system shows how to keep more bees and get more honey with less labor.

Full information about the use of the large hive. 118 pages. Attractive cloth binding.

**PRICE $1.00**

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We have first-class basswood comb-honey shipping case, complete with glass and corrugated paper, 67½c each, without glass 65c each.

**Friction Top Pails all ready for delivery at Newark, New York**

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| 2½ pound cans, f. o. b. | $ 6.50 | per hundred |
| 3 pound cans, f. o. b. | 7.00 | per hundred |
| 5 pound pails, f. o. b. | 10.70 | per hundred |
| 10 pound pails, f. o. b. | 16.00 | per hundred |

The above prices are f. o. b. Newark, or $1 per hundred less f. o. b. Baltimore, Md.

Now is a fine time to gather up your old combs and ship them in for rendering. Write for our terms and shipping tags. Highest cash prices paid for beeswax, or we will change your wax for foundation.

We have in reserve a complete line of bee supplies which we can quote you attractive prices on. We also have some special offers to make on 8-frame hives, bottom-boards and covers.

Send in your list of requirements and let us quote you on same.

**Address THE DEROY TAYLOR CO., Newark (Wayne Co.), N. Y.**

**MR. BEE KEEPER**

You desire your beekeeping to become successful. Then use the best methods and supplies available. These supplies are furnished by us in Dadant's Foundation and Lewis Bee Supplies.

Send us samples f your honey and quote your price.

**WESTERN HONEY PRODUCERS, SIOUX CITY, IOWA**

**Send list of your needs or request for new Catalogue to Department B.**

# Crop and Market Report

**Compiled by M. G. Dadant**

For our November report we asked our correspondents to answer the following questions: 1. How is your crop selling? 2. What are you asking, wholesale and retail? 3. What are the best offers from jobbers? 4. Do you anticipate any trouble in disposing of your crop, and what price will you hold for?

### HOW IS THE CROP SELLING?

The reports coming in this month have been the most remarkable, we believe, of any time since this department was started. They are remarkable from the fact that practically all reports coming from east of the Missouri river and north of the Ohio river are identical, and claim the crop is moving very fast, with a large amount of the honey sold. For this season of the year we think this is extremely propitious.

Usually honey does not begin to sell until cold weather arrives, and this section has not yet had any very cold snaps. In fact, in Illinois we have not had any extra hard frosts, and in some localities tomatoes are still green and growing (Oct. 21).

In the Southeast the crop has been short; at least it so appears from all reports coming in. The honey is moving slowly in this region, and there is very little demand outside for this honey.

The Texas crop is practically disposed of and as the movement is still good, they anticipate no trouble in disposing of the balance of the crop.

In New Mexico most of the crop is sold.

In Colorado the crop is moving slowly in large lots, but the local demand seems to be good. The movement in Montana and Idaho is very slow, as practically all honey there is shipped out in car lots. The same is true of Nevada and Utah, with possibly a little better movement of California honey.

### PRICES ASKED

Throughout the New England States the price is at least as high as last year, beekeepers asking from 25c to 40c for their honey. In New York we have reports of a few lots selling as low as 18c, but practically all are holding for 20c or above, and anticipating no trouble in getting this. One report from Ohio asks 25c and states that probably the price will have to be reduced some in order to sell the honey. Practically all reports from the Central West, including the States of Indiana, Minnesota, Michigan, Wisconsin and Iowa, report good sale and the prices holding up to about a minimum of 20c for extracted and $7 per case for comb honey.

This same condition is true of Kansas, Nebraska and Missouri. In the Southwestern States the price asked ranges from 17c to 20c, according to grade. In Texas the price asked is a minimum of 16c for amber and 18c for white.

In Colorado 20c for extracted and $7 to $8 for comb seem to be about what it is desired to realize by the beekeeper, although many expect that they will have to take considerably less to move the crop. Montana reports asking $7 for comb and 20c for extracted honey, as does Utah. However, there is no movement at this price, and there seems to be a disposition to cut considerably.

The California Association is asking from 16½c to 20c for their crop, according to grade.

### OFFERS MADE

The lowest price made for any eastern honey is 16c per pound for a lot of New York honey, which was not accepted. Illinois reports offers of 17c and Iowa as low as 15c to 18c, none of which were accepted.

Kansas and other Western States offer prices ranging from 17c upwards, but in all cases prices on large lots were below what the producer desired and he is holding to sell locally if possible.

In the Southeast, offers have ranged around 13c to 15c, with but very few offers from the large jobbers. In Texas, offers are made at about 14c per pound, but are not considered by the Texas beekeepers, who are having no trouble in disposing of their whole crop through the Association at much better prices.

It is in the inter-mountain territory and in California that the lowest offers are being made, these being on a basis from 11c for amber to 13c for white honey. Several cars have been sold in Utah at from 12c to 14c and the same is true in California.

### DISPOSITION OF CROP

There will be no trouble in beekeepers disposing of their crop any place east of the Missouri River and north of the Ohio. Practically every report indicates that this year's crop will move readily and that the demand locally will absorb all of the crop before the holidays.

The condition is very unsettled in the Southeast, even though the crop is small, and also in the Inter-mountain States and in California and the Pacific Coast States.

Practically all the trouble is caused by carload lots which it is desired to move at once. The large jobbers and bottlers of honey seem to be off the market, and this is probably due to the fact that the large wholesale grocers are only buying as fast as they need it. We believe that the demand from these will increase with the advent of cold weather. Heretofore usually honey has been sold as early as August and September and delivered in advance of any sale on the part of the wholesalers. Of course, this year, with a question as to what prices will do, the wholesalers hold off until they absolutely need the honey.

Reports from one of the large commission brokers in Chicago, state that one of the main causes for a lack of demand for honey is the wide range in price, even from the same locality. We have found this true in our own reports. Two reporters living in the same section have stated that their honey was worth in one instance 12c per pound, in the other 17c. This, of course, is due to a lack of co-operation on the part of the beekeepers outside of the different exchanges who are selling their goods at a very low price. Of course, this is due in part to the fact that beekeepers are unable to borrow on their crop and hold for a better price, as they have done heretofore. We know of several cars of honey having been sold for from 11c to 12c for the amber and as low as 13½c for best grade sweet clover honey. There is no reason for such a price, inasmuch as the price of sugar is not yet this low. However, as long as there are beekeepers who are willing to accept such a low price, there will always be buyers. The lower the price, the less ready the buyers will be to accept, thinking probably that there is to be a crash in the honey market and that prices will go still lower.

Two points we would like to emphasize in this connection. One of these is that the beekeepers in the East and Central West should do everything to dispose not only of their own crop, but of as much more honey as they can, so as to clear up the market and maintain a living price. The other is that the Western beemen should get together and try to hold for a reasonable figure. There is no reason for one beekeeper to sell a carload of white clover honey at 13c per pound when another not many miles away is holding for 18c, and getting it. The fact is that honey is in good local demand in the East and Central West, at about 30c in 10-pound cans. There is a large discrepancy somewhere, but this cannot be cleared up unless there is some disposition on the part of the producers to hold for a fair price.

Naturally we cannot expect the price of honey to hold indefinitely at the high figure obtained last year, but whether it does hold at a fair price or drops to a below-production cost depends on the beekeepers themselves more than on the wholesalers and jobbers. The wholesalers and jobbers are going to buy as cheaply as possible, and if the beekeepers do not set a price, they will.

Export figures show that only 27,000 pounds of honey were shipped during August to all foreign countries. This is very low, indeed, but we may look for a better demand from foreign countries later on.

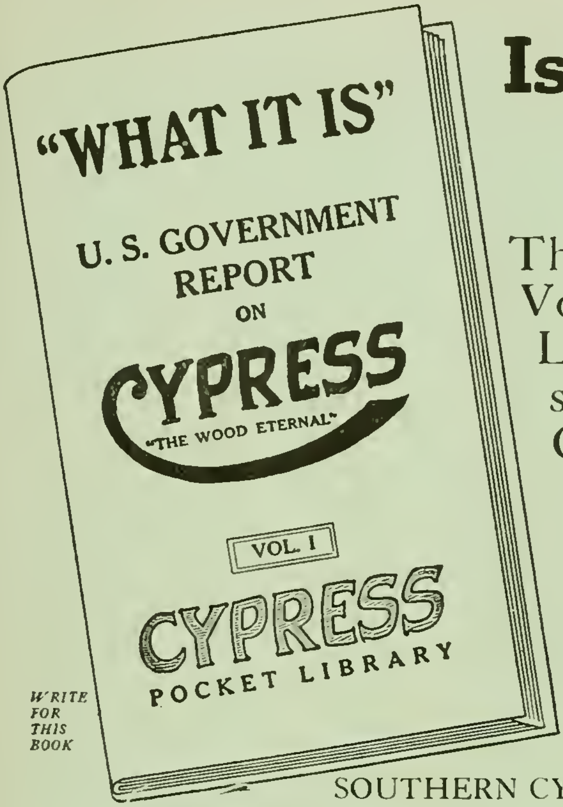
# TWO ANNOUNCMENTS

**FIRST**— MONEY IS SAVED by successfully wintering. Bees and queens represent increasingly large investments. Save them. Remember each strong, vigorous colony, spring count is worth two that come into strength and reach development only later in the season. Keep your colonies strong, by proper wintering. Keep abreast of the times, and be scientific in your treatment of wintering problems. Tell us the location, and the number of colonies in your yard, and we will tell you what our ideas are of what will constitute its CHEAPEST, SIMPLEST, SAFEST AND ADEQUATE protection. And quote too, if you so desire, on what supplies you may need to accomplish this successfully.

**AND** — WE WELCOME the beekeepers of Iowa and the Great West generally, who plan to attend the Iowa Association meetings, and the Great West Horticultural Exhibit to Council Bluffs. And we extend a cordial invitation to all, to make the Root Company headquarters, and to use us in any way that will make your trip to Council Bluffs more interesting and profitable.

**Do not fail to watch this space for developments that will concern and interest all western beekeepers**

**THE A. I. ROOT CO., Council Bluffs, Ia.**



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**Is Uncle Sam's Word Good Enough?**

Then Mr. Bee-man, just write for Volume I of the Cypress Pocket Library and read what our respected Uncle has to say about Cypress ("The Wood Eternal.") You'll then see why any beehive, or bottom or winter case not made of Cypress is not so good as it might be. 42 other volumes all free. The list is in Volume I. Write and it comes.

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Insist on TRADE-MARKED Cypress at Your Local Lumber Dealer's — If he hasn't it, *LET US KNOW IMMEDIATELY*

**ADVANCED PRICES ON**

**BEEKEEPERS SUPPLIES**

The prices shown in our 1920 catalog have been revised. Write for new price list before placing orders

**EARLY ORDER DISCOUNTS**

An early order discount of 6% is allowed on all Lewis Beeware and Dadant Foundation orders placed during November. Take advantage of this by ordering your supplies now. A remittance of $94 will be credited to you as $100 against your purchases of

**LEWIS BEEWARE**
**DADANT FOUNDATION**
**ALUMINUM HONEY COMBS**

**TEXAS HONEY PRODUCERS ASSOCIATION**
**1105 S. Flores St. P. O. Box 1048 San Antonio, Texas**

# A LEADER in AMERICAN BEEKEEPING

GEO. S. DEMUTH

Mr. Geo. S. Demuth, for the last nine years the assistant of Dr. E. F. Phillips in the department of Bee Culture Investigations at Washington, D. C., and one of the most favorably known beekeepers and beekeeping authorities in America, will become the active editor of Gleanings in Bee Culture the present month, associating himself with E. R. and A. I. Root in editorial work.

Mr. Demuth will bring to his new position very unusual qualifications, not only as a practical beekeeper in his own apiary, but as a student and scientist of beekeeping Few leaders in apiculture have ever had the degree of confidence of the beekeepers everywhere that Mr. Demuth has. It is hardly too much to say that beekeepers generally agree to the proposition that "When Demuth says it's so, it's so."

## A Step in Advance

Mr. Demuth's coming to Gleanings in Bee Culture is not only for the purpose of making it a still better bee journal and still more useful to American beekeepers, but also to put him in position to serve the American beekeeping public in all our literature. He will have a part in the revision of the A B C and X Y Z of Bee Culture from time to time; in the preparation of revisions of standard beekeeping books and in the editing of new beekeeping books now planned. All of his great store of beekeeping knowledge will be placed at the service of American beekeepers in whatever we may publish. Just as he has so conscientiously and ably served the American beekeepers at Washington, he is now going to serve them in the capacity of editor of our Gleanings in Bee Culture and our beekeeping books of all kinds.

George S. Demuth needs no introduction to American beekeepers and it is only to introduce him in his new capacity that his name and likeness appear on this page at this time.

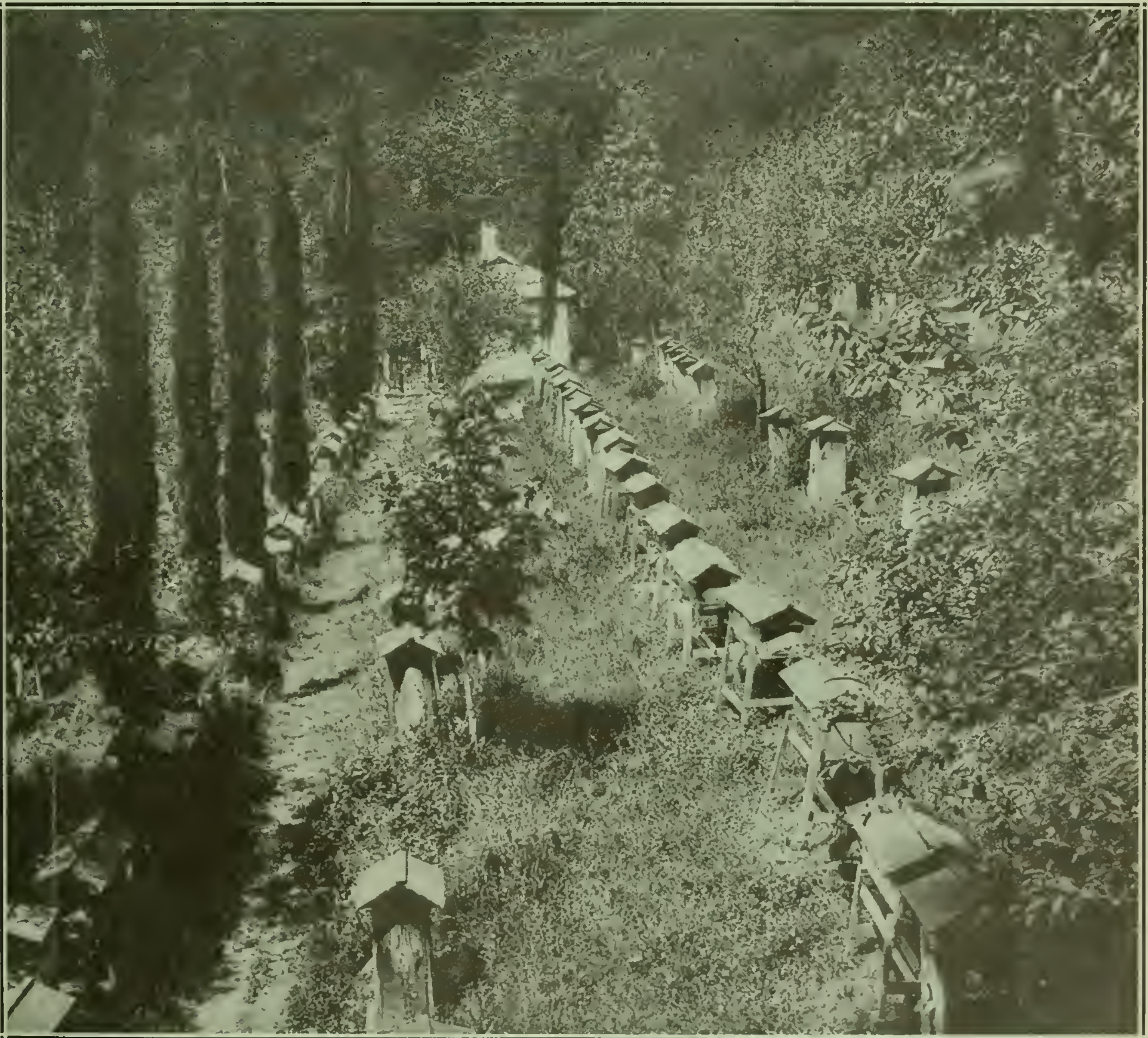
# THE A. I. ROOT COMPANY

**MEDINA, OHIO**

*By E. R. Root, Vice-President of A. I. Root Co., and Editor of Gleanings in Bee Culture*

AMERICAN BEE JOURNAL

DECEMBER, 1920



CAUCASUS APIARY OF MOVABLE-FRAME AND LOG HIVES AT NOVO-FONSK MONASTERY, NEAR THE BLACK SEA, IN SUKUM PROVINCE. THE TALL, SLIM TREES ARE CYPRESSES, WHICH ARE AS NUMEROUS THERE AS IN CONSTANTINOPLE. NOTE THE KEEPER'S HOUSE IN REAR.

# WHEN THE BEES STING

**YOU'LL NEED AN "IDEAL BEE VEIL"—TRUE TO ITS NAME**

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## WAX---OLD COMB

We pay you the highest market price for rendered wax, less 5c per pound rendering charges. Our rendering process saves the last drop of wax for you. "Put your name on all packages."

## HONEY

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By M. G. Dadant.

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Gives all up-to-date methods of rearing queens for the small beekeeper or for the specialist. Cloth bound, 105 pages, 40 illustrations.

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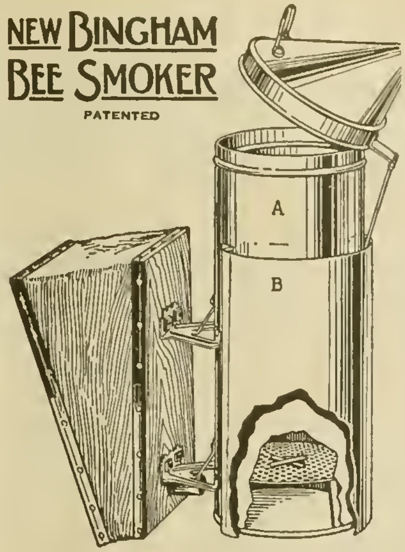
**AMERICAN BEE JOURNAL,**
**Hamilton, Illinois**

**NEW BINGHAM BEE SMOKER**

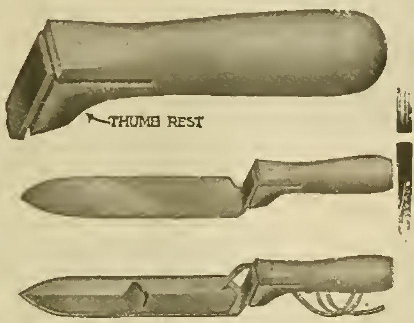
PATENTED



The Bingham Bee Smoker has heen on the market over forty years and is the standard in this and many foreign countrie It is the all-important tool of the most extensive honey producers in the World. It is now made in five sizes.

| | Size of stove inches | shipping weight lbs. |
|---|---|---|
| Big Smoke, with shield | 4 x10 | 3 |
| Big Smoke, no shield. | 4 x10 | 3 |
| Smoke Engine | 4 x 7 | 2¼ |
| Doctor | 3½x 7 | 2 |
| Conqueror | 3 x 7 | 1¾ |
| Little Wonder | 3 x 5½ | 1½ |

The Big Smoke has just been produced in response to a demand for a larger-size smoker, one that will hold more fuel, require filling less often, from extensive handlers.

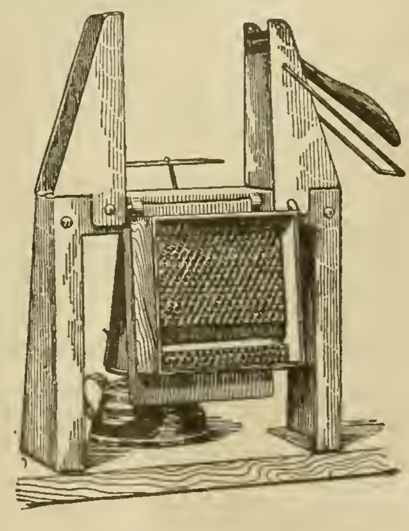


East Lansing, Mich., May 10, 1920.
A. G. Woodman Co., Grand Rapids, Mich.

Dear Mr. Woodman:—I have now had several weeks' opportunity to try out the New Smoker, called the Big Smoke, with the guard about the fire pot. The smoker is even more than I anticipated, and unless something else is brought out that is still better, you can be assured that this particular one will be standard equipment for this place from now on.

B. F. Kindig,
State Inspector of Apiaries.

The Genuine Bingham Honey Uncapping Knife is manufactured by us here at Grand Rapids and is made of the finest quality steel. These thin-bladed knives, as furnished by Mr. Bingham, gave the best of satisfaction, as the old timers will remember. Our Perfect Grip Cold Handle is one of the improvements.



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TIN HONEY PACKAGES

2 lb. Friction top cans, cases of 24
2 lb Friction top cans, crates of 612
2½ lb. Friction top cans, cases of 24
2½ lb. Friction top cans, crates of 450
5 lb. Friction top pails, cases of 12
5 lb. Friction top pails, crates of 100
5 lb. Friction top pails, crates of 200
10 lb. Friction top pails, cases of 6
10 lb Friction top pails, crates of 100

Ask for our special money-saving prices, stating quantity wanted.

**A. G. WOODMAN CO.**

**GRAND RAPIDS, MICH., U. S. A.**

Send us an itemized list of your requirements and let us figure on your goods for 1921. Our new catalog will be issued about January 1.

"GRIGGS SAVES YOU FREIGHT"

**TOLEDO**

**NOW FOR THE 1920 HONEY CROP** **We will buy it, both comb and extracted**

We want especially White Orange, White Sage, White Clover, Basswood, Raspberry.
Write us what you have, sending samples, and prices asked, in first letter.

**SECOND-HAND 60-Lb. CANS**

These cans used only once, packed in good cases. 10 cases, 70c; 50 to 100 cases, 65c; 100 to 500, 60c.

**BEESWAX WANTED**

**GRIGGS BROTHERS CO., TOLEDO, OHIO** DEPT. 24

'GRIGGS SAVES YOU FREIGHT"

**THE AULT 1921 BEE SHIPPING CAGE** Paten Pending

1st. It is a dark cage, much more so than the open screen cages we have been shipping in in the past.
2nd. The feeder uses pure Sugar syrup. Better than Honey or Candy to ship on; it contains water as well as feed.
3rd. Feeders are made more substantial, one-third larger, and have screw cap that will not jar out.
4th. Instead of one small hole, we now use a cotton duck washer in the screw cap that has proven to overcome all the objections found to the liquid feed method.
5th. The Cage is one piece screen wire, protected by thin boards on the outside.

Send for circular describing the cage in detail, prices, etc

ORDERS are coming in daily for 1921 SHIPPING

Five per cent cash discount for Nov, 3 per cent for December, 2 per cent for January, on all orders. Or will book your order with 20 per cent down, balance just before shipping.

**QUEENS** **PACKAGE BEES** **QUEENS**

My Free Circular gives prices in detail, etc. Safe delivery guaranteed within 6 days of shipping point. We ship thousands of pounds all over U. S. A. and Canada.

1 pound pkg. bees $3.00 each, 25 or more $2 85 each
2 pound pkg. bees 5.00 each, 25 or more 4.75 each
3 pound pkg. bees 7.00 each, 25 or more 6.65 each
F. O. B. shipping point. Add price of queen wanted.

1 Untested Queen $2 each, 25 or more $1.75 each
1 select untested, $2.25 each, 25 or more $2 each.
1 Select Tested Queen 3.50 each, 25 or more $3.00 each.
1 Tested Queen $3.00 each, 25 or more $2.70 each

**NUECES COUNTY APIARIES,** E. B. AULT, Prop. **CALALLEN, TEXAS**

The enormous demand for **"SUPERIOR" FOUNDATION** signifies highest quality. Our 1920 output over 150,000 pounds

Beeswax wanted: For cash or in exchange for foundation or bee supplies. Prices on request

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**DR. C. C. MILLER, ENLARGED PHOTO 8x11**

**SUITABLE FOR FRAMING**

A desirable Christmas Gift for any beekeeper

**Price $1 Postpaid**

**AMERICAN BEE JOURNAL, Hamilton, Ill.**

**BARNES' Foot Power Machinery**

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The tests for satisfactory foundation were made with their own bees, their aim being to manufacture and sell only such goods as would be satisfactory to their own bees, in their own apiary.

Every square inch equal to sample in every respect was the aim, and it was done at all times as thousands can testify who have used these goods. Not satisfied with the mills they were using, they tried different workmen until they got a mill that would make a foundation without "Fishbone," as the beekeeper called it; and also got mills that would make foundation of different weights from five square feet to the pound for brood to thirteen square feet for sections.

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Now the Dadant Apiaries have increased to nearly a thousand colonies in ten apiaries. The different locations give a chance for tests in heavy flows, in light flows, in a dearth, for fall crop, for spring. All, so that the proper tests can be made, and only the most satisfactory foundation sent out to the many customers.

**DADANT'S FOUNDATION** EVERY INCH, EVERY POUND, EVERY TON EQUAL TO ANY SAMPLE WE HAVE EVER SENT OUT.

*Specify it to your dealer. If he hasn't it write us*

**DADANT & SONS, HAMILTON, ILLINOIS**

*Catalog and Prices on Bee Supplies, Beeswax, Wax Working into Comb Foundation and Comb Rendering for the asking*

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Because the prices are right for the workmanship.

Because the materials are the very best obtainable.

Because you are assured of good service—guaranteed.

These goods marked with the "Beeware" brand, are famous for giving the utmost return over a period of years at prices which are never extreme.

Conditions this year are causing many men to change their previous buying methods. Buy cautiously, but be sure you get real quality for your money, the kind you get in "Beeware" only.

It will pay you to write or visit your "Beeware" distributer.

His name is on the catalog we will send if you ask for it.

**SERVICE DEPARTMENT**

To give users of Lewis "Beeware" better service and information, we announce the employment of E. W. Atkins, who began work at Watertown November 1. Mr. Atkins is well known to many American and Canadian beekeepers, has worked in large commercial apiaries, and for the past four years has been operating his own apiaries. After taking a degree at the Ontario, Canada, Agricultural College, Mr. Atkins served with the provincial and dominion apiarists of Canada. During the war he was in charge of bee culture extension work for the United States Government in Iowa, Missouri, Kansas and Nebraska. Later he has worked out of the Iowa Agricultural College at Ames for the U. S. Bee Culture Laboratory, and is well acquainted with the needs of beginners and commercial beekeepers alike. Address all communications regarding beekeeping to our Service Department, Watertown.

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BEE HIVES AND APIARIAN EQUIPMENT
BEWARE
WHERE YOU BUY YOUR
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# AMERICAN BEE JOURNAL

VOL. LX—NO. 12 HAMILTON, ILL., DECEMBER, 1920 MONTHLY, $1.50 A YEAR

## MISSISSIPPI

### Glimpses of Beekeeping and Some Other Things in the Land of Cotton, as Seen by the Associate Editor

THERE is a wonderful change taking place in the South of late. One having visited Mississippi five years ago and again now, is struck by the rapid advancement. Cotton is the principal money crop in much of the South, and for a long period the price of cotton has been so low that it has hardly paid expenses. With a good price for its product the South has developed during the past few years as no other section of the country has done. The negro tenant has felt the change, and shows it. On my previous visit to the cotton country, the darkies were rather a dejected looking lot. The returns from their cotton were so small as hardly to supply the barest necessities, with nothing left for luxuries. Now, on Saturday and Sunday, one sees such gorgeous silk dresses among the colored women and silk shirts among the men as would give one the impression that they were millionaires. Many of them drive Cadillac and Hudson automobiles and wear diamond pins. Few of them have any comprehension of the value of money or realize that hard times may come again. At Greenville, I was told of an old darkey who was rather dubious about his annual settlement with the land owner. At previous settlements, he had usually found himself in debt for money advanced during the year, or, at best, with but a few dollars left to call his own. Last year when he presented his check at the bank he was astonished to find something like $2,500 still coming to him. In order to impress the old darkey with the amount of his wealth, the banker paid him in bills of small denomination. With so much money in one and two dollar bills the old fellow thought he had more money than he ever could use. On going into a store he dropped a bill upon the floor. When the fact was called to his attention, he replied: "Never min' about dat, never min' about dat, I got plenty mo'."

The delta region, which extends from Memphis south to Vicksburg, is a stretch of wonderfully fertile land. Here cotton grows to perfection, and one sees thousands of acres of it. Greenville is in the heart of the delta and apparently is a splendid beekeeping territory. It has never been my good fortune to meet a more wide-awake lot of beekeepers or more interesting people than were present at the Greenville meeting the first week in September. Here also I found some new honey plants, of which I had not heard before. The climbing boneset, which is mentioned elsewhere, grows abundantly in the rich lands along the streams. Mrs. Hill brought to the meeting a bunch of goatweed, or wooly croton (**Croton capitatus**), which she reported as an excellent honey plant for a short period of time. The goatweed grows abundantly along roadsides and in pastures across the northern part of the State. Although some species of croton have been mentioned as the source of honey in Texas and California, I had never before heard of honey from any specie of croton east of the Mississippi.

The French mulberry

One beekeeper present said that although he was surrounded by cotton fields, he did not think his bees gathered any honey from it. When it was stated that cotton seldom yielded on sandy land, he replied that probably explained it, as his immediate neighborhood was sandy. This confirms the various reports on this point from other southern regions. Although white clover is generally regarded as best in the North, many beekeepers reported good crops from clover, although not every year. Button-bush, locust, persimmon, chinaberry, holly, heartsease and cowpeas were also regarded as important sources of honey there.

That the region is very favorable for bees can be seen by the fact that one man present had captured 80 wild swarms in one season. One drawback is the discrimination against southern honey in the northern markets. The explanation of this is that honey is gathered from so many different sources that there is no uniform quality. Some of the Mississippi honey is of as fine a quality as goes to market anywhere. However, it would be difficult to select a sample of honey as typical, and supply the same customer with a second lot exactly like it, from a different place or at a different time. Although the northern bee-man has fewer sources of honey, his product is much more uniform and the honey going to market is very similar year after year. In the South it may happen that the bees from one colony will be bringing in honey of a different color and flavor from that coming to another hive at the same time. It seems to me that the remedy lies in the organization of co-operative associations which will blend the honey of a particular locality and establish a market for it under its own trade name. Unless this is done the bottlers are likely to continue to take advantage of the situation to force down the price.

There were several colored men present at the Greenville meeting and I was told that there were some very good beekeepers among them. We drove out to the apiary of Richard Grant, which was the nearest. It was well kept and a picture herewith shows both the apiary and the black mammy who bottled the honey.

### The Agricultural College

Beekeeping is not neglected at the Mississippi College of Agriculture. R. B. Willson gives his full time to beekeeping, most of it being spent in extension work in the field. Willson is a live wire chap who makes a good impression, and who is a good booster for beekeeping, and especially for the State of Mississippi. To hear him tell it there is no better State than Mississippi and no better business than beekeeping. He is doing much to improve the methods in the localities where he works. Dr. R. W. Harned, the State Entomologist, has too many irons in the fire to give much of his personal time to beekeeping. However, in his official capacity he helps along at every opportunity. As Secretary of the State Board he supervises the activities of more than twenty field men who are busy with various problems of insect control. The Plant Board men are fine fellows. All are thoroughly trained men and several are interested in bees. A picture of the group in the field near Gulfport is shown in connection with this article. There was a very good meeting at the college, as there was also at Gulfport.

Field force of the Mississippi Plant Board

### The Gulf Region

There is great development along the Gulf Coast. Large orchards of pecans and Satsuma oranges are being planted. Some of the land is very sandy and poor, while in other neighborhoods it is good. Fine shell roads are being built which make it easy to drive from place to place by auto. The woods are full of titi and gallberry, and failures of the honey crop are very rare. Near Pass Christian I again found some honey plants which were new to me. Mexican clover (**Richardia scabra**), is not a clover at all, but a weed introduced from the tropics. It is common in cultivated fields in the Gulf States from Georgia to Louisiana. It covers the ground in corn and cane fields after cultivation has ceased. The blossoms are small, but the bees seek them eagerly and, according to reports, gather much nectar from them. The Mexican clover is often cut for forage and fed to cattle in place of hay. The picture will give a good idea of the appearance of the plant. The French mulberry, also called Spanish or German mulberry in some places (**Callicarpa americana**), is a common plant in Southern Alabama and Mississippi. Although the plant grows from West Virginia to Florida and west to Texas, I can find no mention of it as a honey plant in any of the beekeeping literature. It seems to be regarded as valuable in Texas, as well as in the Southeastern States. The picture shows the fruit and leaves.

Another plant which seems to be valuable is a species of **Ludwigia**, probably **Ludwigia pilosa**, which we found in the swamps. I can find no common name for the plant, but it is found in swamps from the Carolinas to Florida and west to Louisiana. The bees were working these plants very busily at the time of the visit of our party, but we were unable to get much information as to their value to local beekeepers.

There are many plants common to Mississippi which are little known to the beekeepers, even there, and which are seldom mentioned in the beekeeping literature. Since there are some very active beekeepers in the State and the college is also taking up beekeeping seriously, we may well expect that much more will be known about the honey flora within a short time.

I was very favorably impressed with Mississippi beekeepers and beekeeping. There are many well-informed commercial beekeepers within its borders and it ranks well

R. B. Willson, beekeeping specialist, and R. W. Harned, State Entomologist of Mississippi

There are some good beekeepers among the colored population of the South

up to the front in development. There is a great diversity of conditions within the State, and a visitor to an isolated locality might find things very backward, but one who travels in all parts of the commonwealth and sees the best as well as the worst, will be convinced that Mississippi is in advance of some of the States which have made more noise about what they are doing. There are many side-lights on the trip which must be passed over for lack of space; the delightful hospitality of the people, the big plantations with their magnificent old mansions, and many delightful hours spent afield, will long remain as pleasant memories of the land of cotton.

## MY FIRST AND LAST MEETING WITH DR. MILLER

I procured a copy of Dr. Miller's "Forty Years Among the Bees" in 1909, and through it and his other writings I have become a great admirer of the man, to such an extent that my wife suggested that, since we lived but 25 miles from Marengo, we should become personally acquainted with him. So on a Sunday in August, we motored to Marengo.

Arriving at the town, we enquired for his home. At the gate, however, I hesitated, under the impression that the Doctor might be very much reserved in his home life, and having also learned that he had been sick. But we disliked to turn back after coming this far. So we drove up a long avenue of basswood trees, to the home. Everything looked just as described in his book. We drove to the well and took a drink. By that time the Doctor came out. No introduction was needed. It seemed as if I had known him always, although he seemed very weak. He walked up to our car, shook hands and explained to my wife that he had an affection of the heart from which he did not expect to recover. He smiled, exposing a set of teeth that a young man would have been proud of. He called our attention to his rose beds that he might be justly proud of, then to his home apiary. In twenty minutes of visit my ideal was fully realized. We bade him farewell and started away in silence.

I had not been disappointed, but I wanted to hear what my wife had to say. Before we reached the public highway she spoke: "Isn't he a nice, clean old man?" I cannot recall a single act of my life that gave me more pleasure than this short visit with Dr. C. C. Miller.

P. B. McCABE,

Elburn, Ill.

## MALLOW AS A HONEY PLANT

From G. G. Aylmer, of Quebec, Canada, we received a specimen of the common mallow, with the statement that it is very attractive to his bees. The common mallow, also called Dutch cheese, doll cheese, fairy cheese, and sometimes cheeses (from the shape of the small seed pod), as well as blue mallow, is a widely distributed weed introduced from Europe and generally naturalized in this country. It grows commonly along railroads, in barn lots and waste places. It blooms through a long period, and at this writing (Oct. 27) is still in bloom here at Hamilton. The letter mentions the fact that it blooms there in September, and this year, because of the mild weather, into October. It is probable that the bees were attracted to it at a time when there was little else on which they could work. While bees work upon it to some extent, the writer regards it of little value as a source of nectar. If any beekeepers have found it otherwise we would be glad of the information.—F. C. P.

## MORE ABOUT LAVENDER

On page 375 of our November issue is a short note concerning lavender, together with a picture of the plant in bloom. The plant is extensively cultivated in some countries for the oil which is derived from it. Von Mueller, in his book on "Extra Tropical Plants," which is published by the government at Melbourne, Australia, states that one species of lavender, **Lavandula Stoechas**, is one of the best plants to hold light, sandy soils, and it is also estimated that one acre of it will enable the bees to store a ton of the finest flavored honey every year. A plant which may become the source of a ton of honey per year from each acre is well worthy the attention of the beekeeper. Since lavender is cultivated for commercial purposes entirely aside from its honey, it might very profitably be tried out in this country.

Mexican clover covers the ground in Gulf Coast fields

AMERICAN BEE JOURNAL

Established by Samuel Wagner in 1861

The oldest Bee Journal in the English language.
**Published Monthly at Hamilton, Illinois.**

Entered as second-class matter at the Postoffice at Hamilton, Illinois.

SUBSCRIPTION RATES—In the United States and Mexico, $1.50 per year; five years, $6. Canadian postage 15 cents, and other foreign countries 25 cents extra, per year.

All subscriptions are stopped at expiration. Date of expiration is printed on wrapper label.

THE STAFF

C. P. DADANT ........................Editor
FRANK C. PELLETT ........................Associate Editor
MAURICE G. DADANT ........................Business Manager

(Copyright 1920 by C. P. Dadant.)

# THE EDITOR'S VIEWPOINT

**Dr. Miller**

The following appreciations of Dr. Miller were received from Europe:

From Mr. Crepieux-Jamin, of Rouen, the man who was honored with the order of Leopold, by the King of Belgium, for having cared for 3,000 wounded Belgian soldiers:

"My condolence compliments to Mrs. Miller. Dr. Miller's death is to be regretted. Your father and he, those were two MEN."

From Mr. Ph. J. Baldensperger, of Nice, France:

"My cordial sympathy goes to the Miller family and to you for the loss of our beloved and venerable dean, the patriarch, Dr. C. C. Miller. The sympathy of the apiarian world must be but small relief for his people. Who will entertain us as positively and joyously as he did, on the ups and downs of beekeeping?"

From Mr. Leon Tombu, of Belgium:

"I was very sorry to learn of the death of the venerable master, who was Dr. Miller. It is not a sorrow for the American beekeepers alone, but for the beekeepers of the whole world as well. The American Bee Journal loses with him one of its best writers."

**Meeting Changed.**

The meeting of the Minnesota Beekeepers' Association has been changed from December 7-8 to Thursday and Friday, 9th and 10th. It will be held in the meeting rooms of the Hennepin County Medical Association, Donaldson Building, Seventh and Nicollet, Minneapolis.

**American Honey Producers' Emblems**

The American emblems to wear as rallying signs at conventions of beekeepers ordered to be struck at the Buffalo meeting last spring, are at last ready. We can furnish them of either gold or bronze, and either in pins or screw buttons. They represent a queen on a comb; they are of the size of a dime, very neat and pretty, and are warranted to wear for years without tarnishing. As a much larger number was ordered than at first intended, they are supplied more cheaply than formerly announced. Remit 50 cents for single emblem, to be delivered by mail, or 35 cents each in lots of 20, to be supplied at conventions.

**Diseases of the Adult Bee**

We are indebted to Mr. John Anderson, of Aberdeen, and A. H. Wood, for a clipping of the Aberdeen Free Press of November 2, indicating that the true cause of the Isle-of-Wight disease is a mite, which it is proposed to call "Tarsonemus Woodi, which enters a particular breathing tube of the bee, feeds on the bee's blood, blocks the air passage, and thus cuts off the supply of oxygen from certain muscles and nerve centers concerned with locomotion." We trust this may be correct and a solution of one of the most baffling diseases of the adult bees. In that case, the discoverers of this cause will have deserved great praise from the beekeepers, for it may lead to correct diagnosis of the cause of the so-called May disease, paralysis, vertigo, which have never been fully acounted for. Should this discovery be confirmed, we will give a history of it with credits to its author.

**Appreciation of Dr. C. C. Miller**

We are in receipt from Mr. Thos. W. Cowan, President of the British Beekeepers' Association, of the following resolution:

"The British Beekeepers' Association desire to record their sorrow at the news just received of the death of Dr. C. C. Miller, at the age of 89 years, who by his work and writings had done so much for beekeeping. and by his personality had endeared himself to those with whom he came in touch. They also desire to record their sense of the loss sustained by the world of beekeepers who valued his advice, and to extend to Mrs. Miller and family their deepest sympathy in their bereavement."

**A Memorial Fund**

The suggestion has been made on the part of several friends of Doctor C. C. Miller, that a fund should be raised by the beekeepers for the purpose of establishing a permanent memorial. There is some difference of opinion as to the form this memorial should take. We think that the establishment of a research scholarship in beekeeping in an agricultural collegt would be very appropriate. In case such a move is started, all the bee magazines should join together to raise it. We will be pleased to hear from our readers as to what they think of the plan.

**Prayers to Stop Swarms**

I have heard from many persons that there is a prayer which, when said directly ahead of a swarm of bees, will compel them to land at once. Please inform me if I can in any way get the words of this prayer.

Connecticut.

There has been at all times more or less belief in the efficacy of certain forms of prayer. We read lately that it was once the belief that a **printed copy** of a prayer to St. Margaret would cure pain, if applied on the seat of the trouble. We have looked for information, in several ancient works on prayers as applied to bees, and find the following:

According to Jules De Soignies, a Belgian author, through a popular belief in the Golden Hills of Burgundy and in other parts of France, the following prayer was recommended to stop swarms:

"Bees, the Lord has given you birth here and asks you to remain here." This was to be followed by making the sign of the cross.

In the Ardennes, they kept the swarms from flying away by planting a branch of consecrated boxwood in front of the hives on Palm Sunday.—(L'Abeille a Travers Les Ages).

According to Margaret Warner Morley (The Honey Makers, page 327), an exorcism was found in a Latin ecclesiastical work as follows: "I implore thee, mother of the bees, through God, the King of Heaven, and through the Redeemer, the Son of the Lord, that thou fliest not high, nor far, but that rather thou comest at once to a tree; there gather with all thy kind, or with thy companions. There have I prepared for thee a good hive, that there thou mayest labor in the name of the Father, the Son and the Holy Ghost. Amen."

Both of these authors also report that it was a common belief in Luxemburg that the Lord tried to restrain the honeybee from working on Sunday, and that the honeybee replied: "It is often rainy during the week, and if I do not work on Sunday I may not be able to supply wax for the altars." Whereupon the Lord punished the bees for their disregard of Sunday, by closing against them the corolla of the red clover, making it too deep for them to reach the base of the calyx.

First or primary swarms rarely fly away, as they emerge from the hive. They nearly always settle at least once, when they may be easily hived. So if our correspondent tries one of the above prayers upon a primary swarm, he will have the pleasure of seeing it succeed. But if he tries it upon an afterswarm, it may be quite a different thing. We would prefer to rely on a spray of water from a force pump.

### Mrs. Miller Ill

A letter from Marengo brings the news that Mrs. Miller has been confined to her bed with illness most of the time since Dr. Miller's death. Mrs. Miller wishes to convey to the beekeepers generally her appreciation of the many kind letters received since the doctor passed away, and to thank them one and all, since it is impossible to reply to them directly.

### The Quebec Apiary

Editor Vaillancourt, of L'Abeille, in Quebec, publishes Bulletin 62 of the Ministry of Agriculture of the Province of Quebec. It is an 88-page bulletin, supplying, in a condensed form, the most important requirements for successful beekeeping. In the matter of wintering, he recommends the "silo," and gives directions for building a silo. This method of wintering is certainly good for cold countries like the Province of Quebec. We have in our own United States localities where the silo would undoubtedly be equally successful.

### An Opportunity for Breeding Experiments

The State Plant Board of Mississippi has recently made a survey of the plant and insect life on Cat Island, which is about eighteen miles off the coast from Gulfport. Prof. R. W. Harned, the State Entomologist, who has charge of the work, writes that no honeybees were found on the island. There were fourteen in the party, most of whom were collecting from early morning until late at night. Everyone had special instructions to be on the lookout for honeybees, and as not one was seen it is believed that no bees occur on the island. Prof. Harned is of the opinion that the flora is sufficient to sustain a number of colonies. In case any queen breeder wishes to secure a suitable place for breeding experiments, where the matings can be controlled, it is quite possible that arrangements can be made with the owners to lease a suitable site for this purpose.

Since the breeding of bees for the northern trade is coming to be quite an important industry in Mississippi we would like to see the experiment station, or similar institution, of that State establish a breeding station on the island. There are similar islands off the coast of other Gulf States which might be utilized in this manner. It would seem that any of the States where this branch of beekeeping is being developed might well afford to establish such a breeding station and undertake to solve some of the problems that confront the queen breeder.

### Wintering Bees in Canada

We acknowledge receipt, from F. W. Sladen, Dominion Apiarist, at Ottawa, of an official Bulletin (No. 43) on wintering bees in Canada, in the French language "L'Hivernage des Abeilles au Canada; the English edition of the same to follow shortly.

Mr. Sladen puts in evidence the three requirements of good wintering, whether in Canada or elsewhere: Strong colonies, composed principally of young bees; plenty of healthy honey; protection against cold.

For strong colonies of young bees, Mr. Sladen believes in having a young queen that will lay freely eggs that will hatch in August and September. Even in our Middle States, we believe that September bees are best for winter. They have plenty of time to take their early flights before cold weather.

For healthy honey for winter, Mr. Sladen recommends white clover, alsike clover, and even buckwheat. But he condemns dandelion honey and hard maple honey because they "granulate in the combs." Aster honey "is harvested too late and does not sufficiently ripen" for good winter food in Canada. As a matter of course, he condemns all fruit juices and honeydew.

For protection he recommends the 4-colony winter case, but warns beekeepers against the "drifting of bees," to which we have always objected when colonies are shifted from one spot to another. For this purpose he advises to "bring the hives together gradually towards the end of summer, so as to be in about the same position that they will accupy in the winter case."

For cellar wintering he recommends a temperature of 45 to 50 degrees in a cellar "not too dry."

### Beg Pardon

We may make mistakes in theory and pass them, but it will not do to make errors in facts. The editor made an incorrect statement, on page 226, concerning the music composed by Dr. Miller, and half a dozen people have written us to correct it. The following are the facts:

Dr. Miller wrote the music of "The Hum of the Bees in the Apple Tree Tops," "The Beekeepers' Reunion Song," "Dot Happy Beeman," "Beekeepers' Convention Song," and "Spring Time Joys." But Geo. W. York, is the composer of the music in "The Beekeeper's Lullaby" and "Buckwheat Cakes and Honey." The words of all these songs were by the late Eugene Secor. Mr. York published all the above some years ago, with one by himself and one by James Roat, in pamphlet form, under the title of "Songs of Beedom." A letter from Mr. York reveals the fact that he has a few dozen copies left.

### Winter Protection

The information reached us lately, indirectly, that some beekeepers quote the Dadants as being opposed to heavily packed double-wall hives for winter. Not by any means. When the bees are packed in such a manner that the cold weather cannot reach them, they are in the very best condition for winter. Let me quote the last paragraph in the chapter on out-of-doors wintering in the "Dadant System of Beekeeping":

"If the packing of colonies, singly, in thick packing boxes, in a way that they could not feel the cold of winter, was not so expensive, it would be the ideal way of wintering bees, even in very cold regions. We have not adopted this method because of the great expense that it entails. Our method has been sufficient and although we have lost heavily in a few abnormal winters, we succeeded quite regularly. Our losses are not over 5 per cent, one year with another."

Winter management is mainly a matter of location. But beekeepers can never overdo the protection of their colonies.

### Unsealed Honey for Winter Stores

Says the British Bee Journal: "Unsealed syrup, or honey, will do no harm to the bees **if it keeps sweet,** but during the damp weather of autumn and early winter unsealed stores take up moisture from the air and are then likely to ferment."

True, but even if they don't ferment, as in our cold climate, the increased moisture taken up as stated above produces a noxious effect upon the bees and leads to diarrhea. Better have all sealed stores, as much as possible.

### To Kill Moths

Carbon disulphide, carbon bisulphide, carbon sulphide, according to the United States Dispensatory, are one and the same thing. It is a very volatile, highly inflammable substance, "prepared by the direct combination of carbon and sulphur at a moderate red heat." It should be low-priced, for it is manufactured on a large scale. The above-named book is authority for the statement that "in the works of Deiss, at Pantin, near Marseilles, France, 5,000 kilograms ((11,000 pounds) were turned out daily."

There is another preparation which is not inflammable, carbon tetrachloride, which is also an anesthetic and will kill moths and other insects by evaporation. It is made from carbon disulphide and dry chlorine.

The latter drug is the cheaper of the two, its cost being from 25 to 30 cents per pound, in small quantities, while the disulphide sells at 35 to 60 cents.

### Wisconsin Horticulture and Bee Culture

The little monthly entitled "Wisconsin Horticulture," is worth reading. It always contains a lot of bee information. The October number has a beautiful front page cut.

### Big Colonies

Lieut. C. W. Smart, in Australasian Beekeeper for August, 1920, reports that a colony which he built up "four stories high and which had brood from top to bottom, produced more honey than any other hive in the apiary." **Large hives.**

## PREPARING COLONIES FOR SHIPMENT

By C. P. Dadant

A reader of the American Bee Journal asks for an editorial, giving our experience with shipping colonies of bees and asking at what time they had best be shipped.

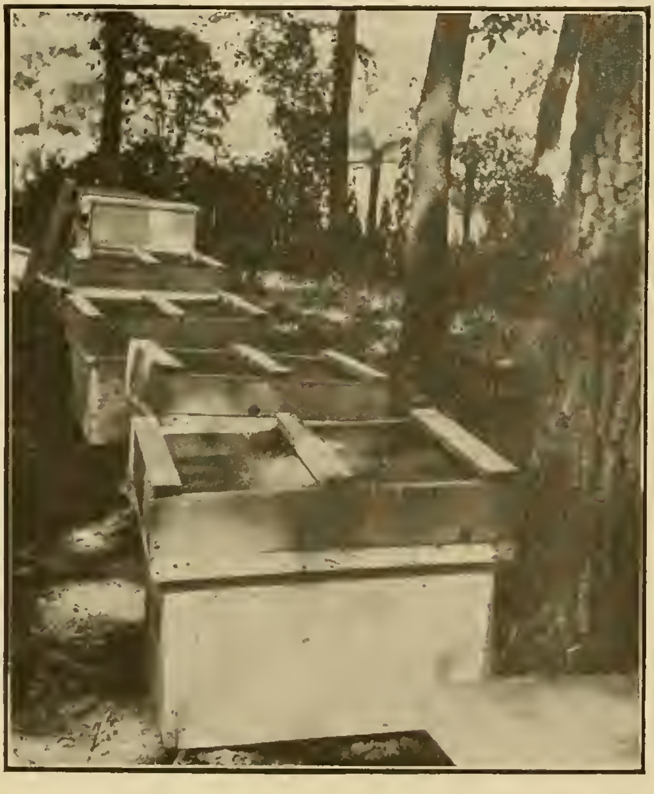
Our personal experience extends over a long period, with shipments to all parts of the country, but we have rarely shipped carloads. The shipping of carloads made a great step towards perfect success when some practical man packed them in refrigerator cars.

Bees in colonies may be shipped at any time. The best time, however, is when the colonies are the lightest in both, or either, brood and honey. At such a time, spring of course, the danger of breakage and loss by smothering is at the minimum.

The amount of air to be supplied to each colony will depend very much upon the strength of the colony, in bees. We shipped hives of bees by express 500 miles or more, in cool weather, during the months of March and April, with no other ventilation than was afforded by the cracks in the joints of the entrance and cover, when they were closed. We do not believe in ever using a screen over the entrance, because that is the place through which the old bees are accustomed to pass in and out, and they worry and crowd each other more at that spot than in any other spot. The rare instances, in which we have seen the entrance closed with a screen, indicated that numerous bees die against that screen, and it becomes so clogged that it is of no benefit for air. A preferable way, when air is given, is over the top of the frames, at either end in cool weather, or over the entire hive body in warm weather.

A wooden frame, made of inch square lumber, and as long and as wide as the hive top, with a fly screen of the proper size nailed upon it, is fastened at the top of the brood chamber, right over the brood frames. Then another cleat, of the same thickness, is nailed on top of this, at each end only, and a light board is nailed across the top. This gives the bees an inch of room, above the frames, under the screen. It also supplies an inch of space, between the screen and the sheltering board. That board serves two purposes. It protects the hive, from the hive above it, when piled up. It also shelters the hive from the direct rays of the sun, in case the colony is left exposed to it, for a certain length of time. However, let us insist on the importance of avoiding exposing the hive to a strong light; much more important still is keeping it away from the sun. But in loading and unloading, it is next to impossible to always avoid the occasional exposure.

Bees may be shipped in very hot weather, if they are given plenty of air and are on old combs, with very little honey and but little young brood. Some people imagine that they must have water. That is a mistake, unless they have young brood. It is true that they will take water if given to them. But the experience of Harbison, who took bees from New York to California, by way of Panama, was exactly in line with the experience which we had at different times later. Bees that were supplied with water arrived in poorer condition, at destination, than those which were left without it. Watery stores, thin honey freshly harvested, are also less safe than very ripe honey or good syrup. The advantage of pouring water over the hives is in cooling them. If they are placed in refrigerator cars, or if they are transported in spring, during cool weather, water will prove more a detriment than a benefit.



Hives with tops closed with moving screens for short trips in hot weather

If it is necessary to cite the experience of others, besides Harbison and ourselves, as to the superfluity of water in shipping cases, we will pick out, at random, the account of an experience. On pages 22-3 of the January number of Gleanings, 1920, T. Dwight Whitman gives his experience in the receiving of bees from long distances: "I have received bees in pound packages that had only candy feed, no water container, from California (he is in Washington) that came through in better condition than those having water. In fact, some of these packages having only candy in them came through in what I would call perfect condition, there being not over a dozen dead bees in a two-pound package."

If you ship bees, let there be no fresh honey in the hives, and as little sealed honey as is absolutely necessary for their safety. You must be the judge as to how much air they need. If the weather is very hot and the distance great, it may be best to have screens at the bottom as well as at the top of the brood chamber. A very populous colony may need an additional chamber of dry combs besides its own brood chamber. In cool weather, or in a well-managed refrigerator car, the average man would be astonished to ascertain how little ventilation they need. But it is better to err on the side of too much ventilation than too little.

Whether in a car, or on a truck, or on an ordinary hayrack, the hives should be placed in such a manner that they are well fastened down and will not shake. It is useless to add that hives are placed with the combs lengthwise in a railroad car and crosswise on a road truck, because of the directions from which the jars are produced in each case. But bees on old combs will stand a large amount of jarring, provided the combs are well fastened. The Hoffman frames, objectionable to so many in handling hives, are a benefit here. But loose hanging combs are readily fastened, by cleats at each end, if they are not sufficiently glued with propolis.

## WINTER APIARY IN MISSISSIPPI RIVER WOODS

By Florence L. Clark

Clayton is a village on the Mississippi, pocketed among high wooded hills. Stationmaster and assistant at the depot are Mr. and Mrs. Adams. He works one shift and she another. This is their occupation. Bees are their avocation, and for a number of years they have obtained profit and pleasure, in their leisure hours, keeping bees. They have about 200 hives. Part of them are kept in town, and part in the woods on a 40-acre timber tract some distance from Clayton.

When it came time last fall to put away the bees for the winter, Mr. and Mrs. Adams were face to face with the problem of lack of cellar room. Only a little more than half of the hives could be kept in the cellar. It was then they decided to make "babes in the woods" of the rest of the bees. Cases large enough to hold six hives, with a space of 6 inches at the back and 4 inches in front were built and placed facing the east to afford protection from the northwest winds of winter. All around and among the cases were the trees to break the wind and afford some shelter, even though their branches were bare. The hives were put in the cases and the spaces at the back and front filled with leaves. On top a layer of leaves 18 inches thick was piled. Mrs. Adams, alone and unaided, gathered and carried 165 tubs full of leaves.

Having prepared the bees in this way to weather the snows and cold of an Iowa winter, Mr. and Mrs. Adams abandoned them entirely, and did not go near until about the middle of January. The photograph shows what greeted their vision as they plowed their way through the deep snows to their winter apiary in the woods.

So undisturbed were the bees in winter's snows that not even a dog track was to be seen. The snow was a foot or more deep on top of the cases and drifted up against the outer walls in a way that made it seem certain, so Mr. Adams said, the bees were as snug and warm as they would have been in the cellar, if not much more so.

Iowa.

## SEEDS OF HONEY PLANTS FOR TRIAL

Through the kindness of a correspondent in China, we have received a few pounds of seed of two of the best honey plants of that far country. They are Chinese rape and Chinese broad bean. Both are said to be very good for the bees. The rape grows very much larger than the field rape grown in this country, sometimes as much as six feet high. We are putting up this seed in small packages and propose to send it to our readers without any charge. Our only stipulation is that it be given a fair chance to show what it will do and that the beekeepers receiving it report to us the result of their trial next fall. Since we only have a small quantity of this seed we cannot hope to supply all who would like to try it, but will supply all requests as long as the supply holds out. Only a few seeds can be sent to each person, but they should be sufficient to get a start in case the plants prove valuable.

We have also secured some of the early-blooming sweet clover seed which we propose to send out in similar manner. This is a biennial sweet clover which blooms about two weeks ahead of the usual white variety. We will send small packets of this seed also without charge to those who wish to give it a trial. A small quantity properly cared for will soon give the beekeeper a chance to introduce this early blooming variety into his neighborhood. If we can add two weeks to the length of the flow from sweet clover we will add greatly to the returns from the apiary in the sweet clover districts. Please remember that we have not tried any of these seeds as yet, but are offering them to our readers free because they are reported to be promising.

## ECONOMIC ASPECTS OF APICULTURE

By E. R. Reppert, Entomologist, Extension Service, A. & M. College.

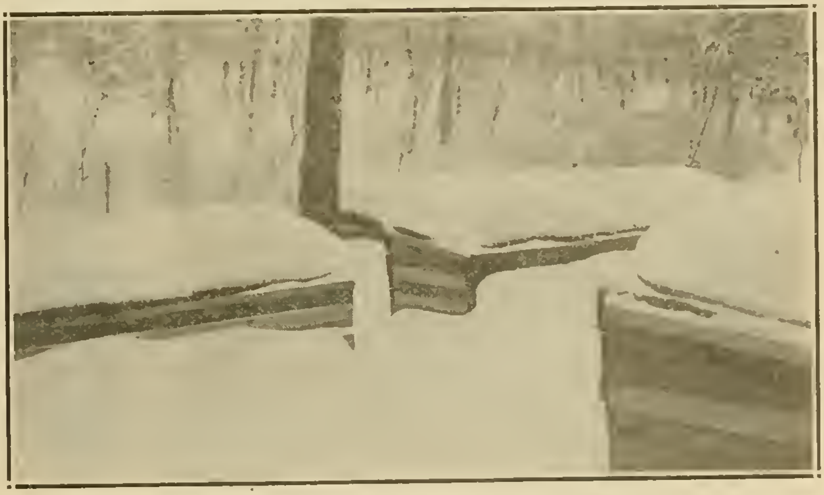
It is safe to say that for the last two years, and possibly for the last four years, no subject dealing with economic questions has been discussed in our country without reference to the European war. While the great conflict was being waged, our whole economic organization was disarranged, values were out of normal proportion, and prices were high. Now, although almost two years have passed since a wave of joy swept around the globe with the cessation of hostilities, the people of our country and of the whole earth still feel the galling burden of high prices, left them as a potent reminder of the period through which they have passed. Hence it is that, deplorable as it may seem when viewed sentimentally, we have come from necessity to look upon things from the standpoint of utility, and our field of vision is marked across with the dollar sign. Mere sentiment will not feed a hungry world, and things that were once done largely as a pleasure, or not at all, are now done as necessary to the world's sustenance, while new values have been attributed to products to which formerly little thought was given by the masses. Such a product is honey.

Honey is considered as a substitute for sugar. Yet with as much logic, and perhaps more, can sugar be called a substitute for honey. Both are consumed primarily for their pleasant sweet taste, both are valuable nutrients. But, except as we consider the sugar in various fruits and vegetables, honey was utilized first. (Of course, we are speaking of sugar here, as the manufactured article. Strictly speaking, honey itself is 75 per cent sugar, the remainder being mainly water.)

### Some Ancient History

The writer was somewhat surprised to learn, by referring to an authority, that sugar was unknown in Europe 500 years ago, being introduced at that time from India as an incidental result of the Crusades, and that in the sixteenth century it cost $2.45 per pound, a consoling thought to keep in mind when the last month's grocery bill is presented. What then satisfied, during the centuries preceding, the sweet tooth of the civilized world exclusive of India and China, granting that the civilized world at that time had cut its sweet tooth? It could have been none other than honey or the juices of fruits. An instance is seriously stated of a sealed jar of honey recently taken from one of the pyramids of Egypt of as delectable flavor as when placed there five thousand years ago—it is supposed the party making the comparison assumed the quality of the first samples.

Jacob included honey in his offerings to his unknown son, Joseph, when he sent into Egypt for food for his starving people, three thousand years before the first sugar refinery was built. Cicero, effusing concerning the joys of farm life, along with the chickens and pigeons, the cows and pigs, the butter and eggs, mentions also the hard-working bee and the toothsome product of her industry. John the Baptist sustained himself on locusts and wild honey; obtained, the locust from the verdure of the plains, the honey from the caves of the bordering cliffs where innumerable swarms of wild bees



Buried deep beneath the snow

stored it. And Pliny included apiculture in his studies of nature.

Thus for ages honey had been the satisfying sweet. During the latter centuries it was a luxury and the consuming public had demanded only a limited amount. With the last few years, as the price of sugar has advanced, the world has come to look upon honey increasingly as a necessity, committees have impressed upon us the need of utilizing to the fullest extent this undeveloped resource, and those who have been in best position to do so have increased their efforts to accomplish this end.

And how undeveloped the resource! One hundred million people as industrious and intelligent as any others that walk the earth; over 3,600,000 square miles of as rich soil as ever grew a shrub, blessed throughout the greater part of its extent with a wide variety of trees and plants that give in their proper season an abundance of nectar. And yet, only enough honey is produced to allow a bare two pounds annually to each of its inhabitants; colonies sufficient in number to harvest but a small part of the nectar secreted by the flowers.

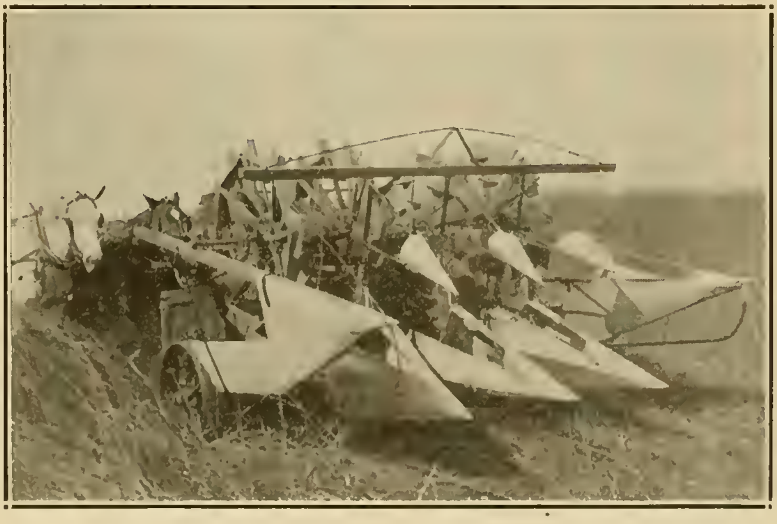
Probably less than one million of our inhabitants, only one per cent, are engaged in beekeeping, and but a small per cent of these own colonies that produce commercial quantities. Fifty to eighty per cent of the nectar of the United States is probably lost because of an insufficient number of bees, and in our own State of Texas, it is said that twenty times the present harvest of honey could be gathered if there were sufficient colonies rightly placed. In the face of the extreme shortage of sugar in the past, it is little short of criminal on the part of the American people that a larger amount of honey is not produced, and their responsibility is heightened by the fact that comparatively little trouble or expense is necessary to put it on the market. Nectar is a natural product.

### Comparisons

There is an increasing tendency, in these days of high cost of living, to draw comparisons between different articles of food, taking into consideration their prices and their relative nutritive value. Merely as a carbohydrate, the value of honey is one-fifth less than that of sugar, the difference being due to approximately twenty per cent of water in the honey. But its energy-producing value is 1485 calories per pound, being ahead of all other foods in this respect, except dates, and far exceeding that of meat, eggs, bread, milk or vegetables. Taking average prices into consideration, honey is a more economical food than pears, oranges, figs, bananas, strawberries, and grapes, which are in the same class of energy-producers. It is also more economical as an energy producer, than celery, tomatoes, canned corn, and all the meats, with the possible exception of pork chops. On the other hand, it is less economical than bread, cereals, potatoes, baked beans and apples.

There remains yet one phase of the subject to be touched upon—namely, methods and equipment, and a reference to bee diseases. To properly solve the problems implied will necessitate an educational campaign that will reach to all sections and that will make the individual realize that it is to his advantage, as well as to that of others, that he should practice the latest and most improved methods, to secure for himself the greatest income and for others the highest degree of safety, and reap in the fullest measure the harvest bountifully supplied by Nature. It is estimated that previous to last season, year in and year out, the gum or box-hive, which does not allow bee or comb manipulation, produced annually, in Texas, an average surplus of three pounds, while hives with movable frames, properly handled, produced an average surplus of forty-five pounds, and last year the latter class produced an average of fifty-seven pounds. Is it any wonder that in east Texas, in which are perhaps some of the richest nectar-producing sections of the whole State, but where gums or box-hives are the rule, beekeeping has not progressed and become the industry that it should? Is it any wonder that, with bee disease and moths rampant, encouraged as they are by these conditions, the beekeeper with modern methods has shunned this rich field, and left it undeveloped, and worse, as a menace to the surrounding territory and the State at large? These are matters that must be considered and made subjects of education and publicity campaigns, that beekeeping shall come into its own and this source of wealth develop to its fullest extent.

Texas.



Front view of the Leudke sweet clover harvester

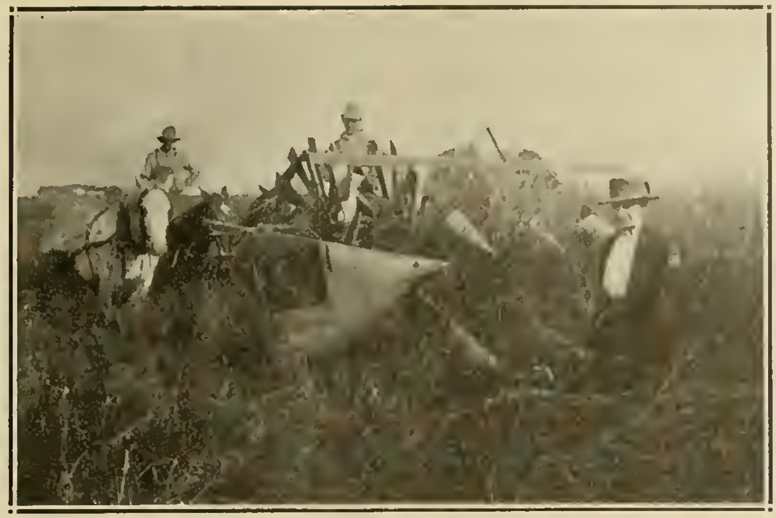
## HARVESTING SWEET CLOVER SEED

Sweet clover is the subject of animated discussion among the farmers, on the street, at institutes, at fairs and wherever the tillers of the soil chance to congregate. It is no longer feared as a weed, but more and more its value as a soil builder is being realized. This augurs well for the beekeepers, and everything which can be done to extend the popularity of the plant among the farmers will improve the pasture of the beekeepers who live within reach of their fields.

Sweet clover is a vigorous plant, and produces seed in abundance. However, it is a hard job to harvest the seed crop after it is grown, and more than one farmer has been disgusted with the whole proposition when he came to gather his crop. The writer has had experience in a limited way with sweet clover and appreciates the difficulty. If cut with a mower and raked into windrows, a large part of the seed will be scattered. The binder is not well suited to the work, nor is the ordinary threshing machine suited to threshing the seed after the plants have been cut. The progress of sweet clover has been greatly handicapped by the lack of suitable machinery for handling it. There have been numerous makeshifts recommended, but none of them are entirely satisfactory. The writer and his boys threshed about a thousand pounds of seed by beating it out by hand on a large canvas. It is needless to say that one could not expect to grow a hundred acres of the crop to be handled in this way.

For several months we have been hearing about a harvester made especially to gather the sweet clover seed from the standing stalks. The machine was said to thresh the seed as it went, thus avoiding the necessity of another operation. Instead of having to cut the crop with a mower, haul it to the yard and stack it, and then bring in a threshing machine to finish the job, one trip through the field was said to be sufficient to finish the whole operation, the seed being sacked from the machine.

So interesting did this sound that, when word reached the office that a machine was at work within thirty-five miles, three members of the staff got into an auto and away we went



The sweet clover harvester gathers the seed and leaves the straw on the land

to see for ourselves whether there was any easier way to harvest sweet clover seed than to beat it out with a fork over a canvas cloth. It was in October, too late for the seed crop to be at its best, as much of it had already shattered off. The machine was at work on the farm of the Rice Brothers, near Discus, Ill., and sure enough, it was getting the seed as it went. There was forty acres in the field and it was a wilderness of sweet clover, much higher than a man's head and so thick that one could hardly walk through it. Instead of the horses being hitched ahead of the machine and pulling it, like a self-binder, they were hitched behind, and pushed it. It was, in fact, a case of "the cart before the horse." The first picture will give a good idea of the appearance of the machine as it came to the end of the row.

Four horses are used in reverse position; two on each side of the tongue, so, although they pull the machine, it really precedes them. Two wheels carry the machine while the end of the tongue is supported by a caster wheel to facilitate turning at the corners. A chain sprocket on the large axle drives an overhead shaft bearing four large paddle or threshing wheels at a high speed. Parting guides tend to compact the stalks as they are drawn through a series of fin-shaped paddles, some rigid, others mounted on the sides of the threshing wheels. These notched paddles mesh loosely. When the seed is ripe the stalks are stiff, and being drawn through are bent into a series of angles which hold while the seed is beaten off. A draft of air drops the seed into conveyors that carry it back to a bin, where it is screened and sacked.

Two men and four horses operate the outfit. One man drives the team and the other tends to the screening and sacking.

The machine is easily raised or lowered at will and takes a swath 9 feet wide. It runs easier and faster than a binder, and when the field is finished both harvesting and threshing are done.

The machine is the invention of G. P. Leudke, of Springfield, Ill., who has only placed a few of them on the market as yet. A number of minor details present themselves for improvement, but in the main he seems to have hit upon a really practical plan of harvesting sweet clover. An economical method of harvesting the seed seems to be all that remains in the way of the rapid extension of the acreage seeded to the best honey-producing plant known to the Middle West. After riding across the field on top of the machine and watching the seed drop into the troughs for its retention, the writer was convinced that the trick is done and at last a practical harvester is here. Success to Mr. Luedke, the well-wishing of all beekeepers are with him.

## "SELFISHNESS"

By E. G. LeStourgeon

Ever since men organized themselves to build the tower of Babel, men have organized to protect their assumed rights or trade interests. Nations, empires, ententes, labor unions, churches, lodges, farmers' and even beekeepers' organizations are founded on this same desire. Into each enters the idea of selfishness, and the per cent of selfishness has generally governed the length of life of the organization. The big **I** and the little **you** of our modern slang, because I belong and you do not, is responsible for the world-wide unrest today.

The ideal of the narrow, selfish organization is now fighting its last stand. No group can exist apart, and yet expect to live from the common source.

From the organization of the first beekeepers' association there has been a line of this narrow self-interest manifest. To be a member one must not only be a beekeeper, but also one that believes as we believe. So strong was this sentiment that almost all of the older organizations became mutual admiration societies, took in no new members and died with the last patriarch.

Very naturally these societies did little but defend the system of beekeeping advocated by its members. Their discussions were mostly on theoretical subjects and were settled by debate rather than experiment.

While the old associations were dogmatically doing their best, a new race of beekeepers was coming into existence. In favored sections men were building apiaries that numbered in hundreds instead of tens. These men were devoting their whole time to beekeeping and had to make it pay. They cared little for theory and developed practices of their own. Their problems were disease, transportation, markets and supplies. Consequently there arose a second set of beekeepers' associations. These men were forced to band themselves together for common protection. To them the object of the association meant bread and butter, dollars and cents, not pleasure. By associating they could put on disease control measures; they could buy supplies in car lots; they could sell direct to the wholesale dealer; and they could get hearings from the Railroad Commission relative to freight rates.

But even these groups were too

Side view of harvester, showing how horses are hitched narrow. Each group wanted to be the favored one, each wanted to dominate the market, and be favored in the buying of supplies. A few years of this kind of competition convinced the managers of such associations that even large State or regional associations must either be united or have some understanding as to their common interests.

Growing up along with the bee industry were certain other industries which were wholly or partially dependent upon the beekeepers. Manufacturers of bee fixtures, comb-foundation and publishers of bee papers were entirely dependent on the beemen, and those of honey containers partially so. These men, whose living depended just as much upon the bee as that of the bees' owner, were not included within those asociations. At the same time the transportation of bee fixtures and products became great enough to attract the express and railway companies, and likewise many other firms had more or less interest in beekeeping.

This multiplicity of interests, clash of activities and strife for supremacy, resulted in the formation of the American Honey Producers' League. If this succeeds, its component parts will have to give up the selfish idea of rushing honey to market to get a high price and spoil future sales. Instead of glutting the market, they must help create a market so that not only they, but other men, may sell. They must remember that manufacturers, printers, transportation agencies and even schools are vitally interested in bees, and where such parties desire, bust be admitted to the League. It is far easier to gain the desired point by a co-operation of allied interests than to gain the same by sheer force of the dominant party.

## A NOTABLE BUILDING

We are pleased to picture in this issue the new Apicultural building at the Ontario Agricultural College. It is of more than passing interest, because it is the first building of its kind to be erected especially for beekeeping at an agricultural college.

A small frame building was erected for the beekeeping work at the Massachusetts College of Agriculture a few years ago, but it was not in the same class with this, which is a fully equipped college building.

We congratulate the beekeepers of Ontario upon the fact that their college of agriculture is the first to recognize beekeeping of sufficient importance to justify a really creditable building. We congratulate Prof. F. E. Millen upon being the first teacher of beekeeping to attain the rank of full professor with such a fine structure built for his exclusive use and that of his staff. We congratulate former Prof. Morley Pettit as founder of the beekeeping department of the Ontario College as being the first to establish a course in beekeeping which has grown to such an extent as to occupy such a building.

We feel that the dedication of this building by the Ontario beekeepers at their convention in December will mark a new era in the development of the industry. It is so very recently that beekeeping has received serious attention at any of the agricultural schools, that it is a matter of surprise that a college should erect a building, modern in every respect, for the exclusive use of the beekeeping department. Minnesota has a building at its University for beekeeping, but it was built for another purpose and given over to the beekeepers when the other department needed larger quarters. The Ontario building is a new and fireproof structure, built especially for the beekeeping work.

The building is of red tapestry brick, with oak trimming; iron staircases, finished with mastic, and with fire escapes at the rear. On the top floor is a lecture room 55x40 feet, and seats to hold 250 students. The lecture room is fitted with lantern, enclosed blinds and sliding blackboard.

New bee building at Guelph

On the main floor there are offices, reading room, small lecture room, laboratory and steel vault set in concrete for the preservation of records. On the basement floor there is a wax room, a honey room, a stock room, a bench room and a bee cellar. The bee cellar is finished with walls 18 inches thick, waterproofed inside and out, and has a false ceiling with ventilating system. Inside the concrete walls it is lined with matched lumber, covered with two thicknesses of insulating paper and two-inch cork boards.

The building is fitted with steam, hot and cold water, and gas. It is also provided with dark room and elevator. From the above description it will be seen that the beekeeping department at the Ontario College has received everything in the way of fittings and equipment that is provided for any other department.

We have pointed with pride to Minnesota as the first to establish a beekeeping course with the rank of a department on this side of the line. Let us hope that it won't be long until all the colleges will not only have beekeeping courses, but a full staff of instructors and research men, housed in such buildings as Millen and his staff now occupy.

## HONEY FROM PRODUCER TO CONSUMER

By Arthur C. Miller

Can you sell honey as well as produce it? Can you produce a good article, and do you really know a good article? You say it tastes good, looks good; but is it good? All too often it does not suit the majority of the consumers, but why?

I have not sold thousands of tons, but I have sold many tons, many of my own production and many purchased, and I early found that what I liked was not always what the public liked. I tried putting up different kinds, properly designated, and at once found myself in a sea of trouble. It was not possible to keep track of what a customer had previously had, and if they did not get the same as they had before, there was remonstrance, changing or stopping.

Then I undertook blending. Simply said, but not simply done. It not only called for a keen sense of taste and a discerning palate, but it called for a community palate. Several promising blends were made and distributed freely among all manner of people. The blend which met with the approval of the widest variety of folks was adopted and the others were abandoned. The kinds and proportions used in the blend were carefully recorded and closely adhered to. Sometimes one or more sorts of honey were not to be had, and then there was a search to find others that would as nearly as possible match those previously used. It was no easy task, and often the price of a desirable sort was such as to seriously shave the profit. But if one is selling honey in a retail way or bottling it for a retail trade one must keep up the uniformity even if at a temporary shrinking of profit. Some of the big bottlers have learned this, while others have not.

And that brings us to bottles and bottling, a branch of the business which adds materially to the cost of the product and which the consumer has to pay. When the price is high, the consumer buys reluctantly, uses sparingly and the smaller the package, the greater the evil.

I am beginning to believe that the worst misfortune that has come to the retailing honey producer is the small bottle, say one pound or less. It sounds good to hear that the honey is bringing 40c to 60c per pound bottle. But it is not good. A little honey is bought once or twice by many people, and then they stop and turn to some cheaper sweet and seldom or never go back to honey. The claim that many people are getting a taste of honey who never had it before is true as far as it goes. People who have never eaten honey seldom buy it. Let many such persons have a free sample and they will buy it if it is within their means, but 50c honey is not within the means of many people. I know, because I have stood in stores for hours and listened and quizzed.

From some experiences of my own and of others I have come to the conclusion that a vastly greater amount of honey can be sold if put out in large packages, say one to five-gallon cans. Many a honey lover will readily buy a 60-pound can at 20c to 25c a pound, plus transportation, and then use it freely, but that same person will hesitate long before buying anywhere near 60 pounds in pound bottles. I know of one producer and dealer who sells hundreds of 60-pound cans directly to consumers, often shipping the cans hundreds of miles, and the same customers order year after year. Do you think that man would for an instant consider bottling his honey for the sake of the slight advance in price? Not much he wouldn't.

Then there is the small producer who has a few hundred or a couple of thousand pounds to sell. Invariably he turns to the pound bottle, more's the pity. And these fellows are seldom good merchants. While motoring through the country I have found many wayside stands selling "honey." It makes one shudder to think what some of the "stuff" offered will do to the honey trade. Sometimes very dark, oft ill-flavored, more or less specks and dirt and foam, poor labels or none at all, sticky jars, and to cap the climax, charging more for it than a fancy article costs in city stores with free delivery and goods charged. And not infrequently, those roadside stands are anything but attractive, oft covered with dust, and perhaps so placed that there is small chance for a would-be purchaser to stop his car without impeding traffic or necessitating the crossing of the highway through a stream of autos to get to the stand. Pity that the roadside merchants cannot travel and see themselves as others see them.

But honey, particularly comb honey, does not lend itself to the common form of roadside merchandising. First, even in the best of stands, the pound jar should be abandoned and nothing less than a quart jar used, and gallon cans should be carried. If a customer wants to sample it, it is easily done from a jar kept for the purpose, a little of the honey being poured onto a slightly salted cracker. This system works very profitably, altogether too profitably ofttimes, because the proprietor is cleaned out of honey long before the roadside selling season is over.

Quality, uniformity and cleanliness are indispensable, and large packages are the most profitable, both immediately and for continued trade.

I spoke of poor labels. Some are atrocious. Many of the stock sorts offered by sundry concerns may be good as samples of types, borders and papers, but they do not add to the good appearance of the honey. Do not use labels with many colored inks or papers. Golds and golden yellows, if used sparingly, make good backgrounds, and black or golden brown for the lettering. Labels should be proportioned to the size of the package they are to be used on.

Push the sale of large packages at reasonable prices.

Rhode Island.

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## MANAGEMENT TO SECURE THE BIGGEST CROP

By Frank Coverdale

In treating this subject, many details must be taken into consideration, such as location, strain of bees, management, kind of hives, supers and method of wintering. Getting all colonies strong ahead of the honey flow to be ready for the harvest, rather than when the harvest is over, is the test of good beekeeping. Bees at the close of the harvest too often are only boarders, who may die off before the late flow.

I have found that when a colony is given an abundance of room to enlarge the brood nest before the harvest is ready, followed by reducing the breeding area when the nectar begins coming in freely, so as not to allow more breeding room than is necessary to maintain the colony, I secure best results. With a hive of limited capacity the beekeeper can control things to his liking. Two 8-frame bodies make a brood chamber which is too large, while an 8-frame body placed underneath a half-depth set of combs will make a brood chamber which will provide the average queen an abundance of room. If these shallow supers are stored away with sufficient honey, they will provide stores and breeding room to build the colony to full capacity for the clover harvest. When the flow begins the excluder should be placed above the hive-body and the shallow super placed over it to receive the honey. If the beekeeper runs for comb honey he can set two of these shallow supers of brood on a bottom board beside the parent colonies, moving them occasionally when the bees begin working from them. They can finally be doubled up in piles of 8 or 9 of these shallow supers, leaving a queen in each. As the remaining brood emerges, the combs will be filled with honey in case of a good flow. If desired, all the bees can be jounced out, paying no attention to the young queens, a method which I have practiced for years. For the breeding period preceding the heartsease flow, I have found an 8-frame hive to be sufficient for the needs of any queens which I have ever had. Feeding must be resorted to to induce the queens to fill even that space

Morley Pettit, founder of the beekeeping department at Ontario College of Agriculture, and F. Eric Millen, present apiarist, in a Pettit outyard at Georgetown.

at this season, but it is profitable in a location like mine. Of late, however, sweet clover is serving this purpose, though even with sweet clover there seems to be no need for more than 8 frames of breeding room. The queens do not lay under any conditions at that season like they do in May and June.

Where the queen is given two 8-frame bodies for breeding during the entire season and sections placed over the two bodies, the result will make the comb-honey producer sick. Such colonies will swarm as much as where only one body is occupied by the queen. By dividing these two bodies when the flow begins and placing each one beneath a body of empty combs or foundation, with an excluder between, provides plenty of room and greatly retards swarming. The point I wish to bring out is, that in order to secure the most honey, there must not be a great mass of brood emerging when the flow is nearing its close. These late bees come on just in time to be consumers, and are produced at heavy cost in honey and care of nurses. When the honey consumed, together with that used to develop them are counted, surplus bees at that season count heavily on the crop finally secured. This will be readily apparent to the beekeeper who has noticed how rapidly the stores diminish when brood rearing is at its height in spring. The past season, in my yard, colonies kept with two full stories of brood rearing room, throughout the season produced fully one-third less surplus of extracted honey. The beekeeper with thousands of colonies may think that he cannot bother with so many details, but the man with two or three hundred colonies will find it a paying manipulation. Where nectar is available all season the bees should be kept strong all season, but it is poor economy to rear bees at a season when they cannot add to the production of the hive. Honey used to stimulate breeding to gather a harvest can be used to great profit for the beekeeper.

Iowa.

(I cannot agree with Mr. Coverdale that an 8-frame story-and-a-half hive is sufficient to provide breeding room for the average queen. I used 8-frame hives for several years, and later discarded them for 10-frame hives. I was not satisfied with less than two 10-frame bodies of brood and honey at the close of fruit bloom. There was usually 14 to 16 frames of brood. After providing storage for honey and pollen, the story-and-a-half 8-frame hive leaves only two-thirds as much breeding space. I found that the bees in 10-frame hives in the same apiary and under the same Iowa conditions in 10-frame hives would fill as many 10-frame supers as those in 8-frame hives would fill 8-frame supers. In time I discovered that even the 10-frame hive was too small for best results in my location, where white clover furnished the surplus and where the season was short. Mr. Coverdale's point of getting the young bees ahead of the flow, rather than behind it, is fundamental to successful beekeeping. With the larger hives I found much less manipulation necessary to secure this result.—F. C. P.)

## A PREACHER BEEKEEPER

By C. E. Rogers

What have bees got to do with Christianity?

The Rev. Edward V. Gardner, pastor of the Eureka, Kans., Congregational church, finds a close connection. His knowledge of bees helps him to win souls. The Rev. Mr. Gardner is Deputy State Bee Inspector. But in addition to inspecting bees he keeps a quantity of supplies in a commodious shop. Every year sees a few more Gardner bee converts in the neighborhood of Eureka.

"Bees are my graft," he said not long ago. "I cash in by the confidence I gain among my rural congregation. A farmer has no respect for a preacher who doesn't know something about farming. A good many members of my congregation become interested in bees before Christianity. It's a fair graft."

In addition to getting converts, Mr. Gardner's bees provide him three other desirable, if not necessary, things—exercise, recreation and honey.

Manhattan, Kans.

## THE CENTRAL PLANT AGAIN

An Illinois reader writes to express appreciation of the article on the Pettit central plant in the September. He asks for more details of floor arrangement, bottling equipment, piping to tanks, etc. His letter was referred to Mr. Pettit, who replies as follows:

Georgetown, Ont., Sept. 14, 1920.

We are more enthusiastic about the central plant every year. But, unfortunately, when we built we could not "think big enough," and are very cramped for space. Instead of 25x40 feet the building should be at least 30x80 feet. I mean for real comfort in the management of five or six hundred colonies. Let the prospective builder count on an extracting room large enough to hold at least two-thirds of his crop in supers. Because, when you start taking off and the bees are beginning to get a little dark stuff you do not want to take time to extract till you have the white honey all safely under cover. Then if the extracting room can be reserved for one purpose only the empty combs can be stored there until needed again. To be quite generous with space this room should accommodate all of the supers—for six hundred colonies, at least two thousand 10-L—besides the extracting machinery.

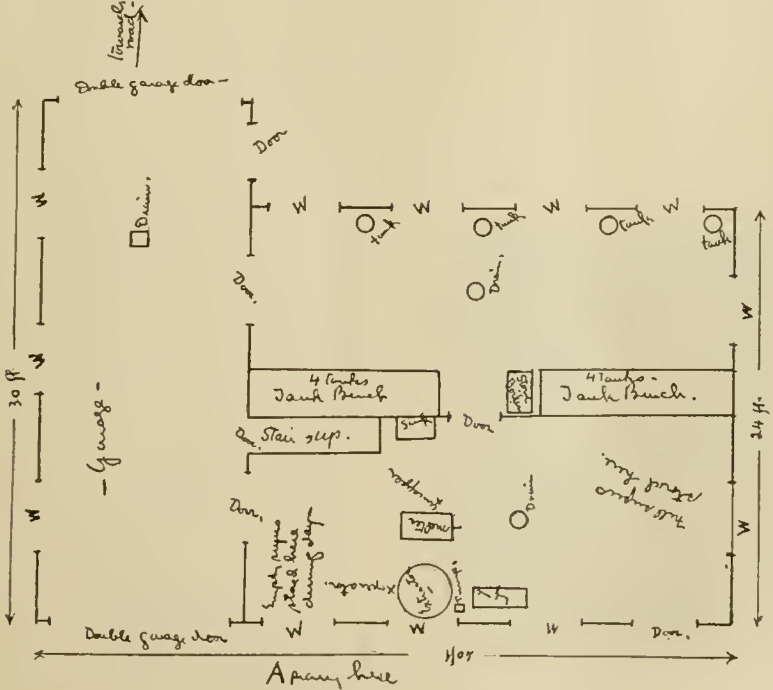
Edward V. Gardner, the beekeeping shepherd of a Kansas flock.

The honey room also wants ample storage space. We have twelve tanks like the ones shown on page 304. We fill two in a day and their total capacity is about thirty thousand pounds. By the time they are all filled some one generally starts filling out into selling packages. The honey all goes into tin where it is sold in the granulated form, so there is no answer to your correspondent's question about bottling arrangements. The tank-benches are three feet high, allowing the filling from tanks to be done in a comfortable position. Windows all along the wall give light and cheer, and high ceilings give airy comfort to the beekeeper, who is naturally a creature of the great outdoors. By rights the tank room should not need to be cluttered with honey in crates. This should be piled in a shipping room nearest the garage.

The garage is 30 feet long, rather cramped for the two trucks we use now. The stairway goes up from it. Two feet is plenty width for this as very little is carried up it. In the extracting room the extractor is over by the window, with plenty of light and air. The pump is a three-quarter inch rotary, and the honey pipe is galvanized iron one inch in diameter. It goes up beside the window to the ceiling, across through the partition, over the door, and ends in a "tee" just inside the honey room. On one end of the "tee" is a cap and on the other end a rubber hose reaching to the bottom of whatever tank in that end of the room is being filled. Rubber hose connects the pump with the extractor and also with the metal stand-pipe. Steam from the boiler is connected to the melter by a pipe running to the ceiling and along to a point directly above the melter. Rubber hose leads it down to the melter, which is piped for the two knives as well as itself. The boiler is heated by a gasoline stove, which also warms up the honey room and assists the clarifying of the honey. There is no stove in the extracting room, and before another year we hope to banish the engine as well.

Upstairs the plan is similar. The carpenter shop is over the extracting room and the office is over that end of the garage. Both have a fine view of the apiary and get lots of sunshine for the early spring days, when most of our shop work is done. The other longitudinal half of the building is on the cold side during that period, and is used largely for storage of new material to be made up. It has a large pair of trap doors over the garage, where goods are handed up or down from the truck. For heavy boxes a pulley hoist is used. Both rooms are fitted with square box cupboards between the windows. These have heavy plank tops and are built for work benches as well as storage. One man can work comfortably on each. Before this appears in print we hope to have the whole building well equipped with electric lights for the dark mornings and afternoons which are coming all too rapidly.

The prospective builder should consider very carefully what his space requirements are going to be. Where there is a building at each outyard it is hard to realize what total capacity is available. Just total up and then remember that all that space must be supplied by the central plant. To use an old piece of advice, calculate how much room you need and then double that and you may have nearly enough. Especially where much hired help is used "a place for everything" is very important. "Things of a kind together" is another way we have of expressing it. For instance, the queen excluders are all piled in one place. When they all go out and are in use that place should be vacant and remain so until they come back. Then the helper with but a dim idea of order has less excuse for leaving some in every room in the building and the rest piled up around the apiary door.



Ground plan of Pettit's central plant

Special rooms for each branch of the inside work are very helpful. Then the machinery and supplies can be left in order for conveniently taking up that work when the time comes. In addition to the rooms we have, I would like a room especially for rendering wax, and another for making feed. Our honey room is just large enough for a tank room. There should be another room quite as large for storage of the crated honey. This would be the shipping room and have a desk with shipping tags, stencils, etc. These at present are kept very comfortably in the office. We find it an advantage to buy tins, sugar for feed, and other supplies months in advance. They might well be stored in the rooms where they are to be used.

An old barn, which we found on the place, has been pressed into service for such storage and for wintering material—an item which has not been previously mentioned.

MORLEY PETTIT.

## THE HONEYBEE IN RUSSIA

While the human insect is transforming Russia into a large plunder field, giving up that rich country to famine, and while the bolchevik foulbrood destroys the most prosperous colonies, let us examine what the real honeybees were and are doing; those little monarchico-democrats who put in practice so nicely the dream which has hatched in the heart of the Russian peasant—A republic with a czar.

If there is a country which may be called the paradise of honeybees, it is certainly Russia, that of the Center and of the South, of course.

First, it is the country of basswood, of vast forests with powerful vegetation, of blooming plains, of numerous streams, whose capricious meanders water fat prairie covered with honey plants and bordered with rows of willows, whose golden and silvery catkins full of pollen announce to the bees the arrival of spring.

But while nature, in Russia, generously gives to bees what they need, the orthodox religion of that country needs the bee for the production of beeswax, which is used in the manufacture of wax candles, which are of constant use in the practice of the cult. So the little intermediary between nature and man, for the sustaining of life, becomes also a link between man and his Maker, for the needs of the soul. Whether there is a favor to ask, a sorrow to calm, a memory to honor, a festival to celebrate, baptism, communion, marriage or burial, the beeswax is transformed into a little sweet-smelling flame, burning before the altars to accomplish the mission of peace and hope. It is therefore natural that bees should secure, in Russia, the protection of the Church and the good will of the inhabitants.

Since the Church needs the bees, it sustains their interests by stimulating the cultivation of rape and buckwheat. Rape serves to manufacture the vegetable oil used in the cooking of vegetables during the days of abstinence and of Lent. Buckwheat supplies the meal used in the preparation of the cakes which inaugurate the end of the fasting. Both of these plants produce large stores for the active pilferers. So a close relation unites the bees to the Church, which carefully protects those little sisters of charity whose life is devoted to celibacy and who work incessantly anl lose their life, sometimes, in the defence of their home. It is therefore quite natural that each convent should possess an apiary, managed by a monk who fulfills this duty as a sacerdotal office. By destroying religion and abolishing the traditions of the Greek Church, the bolchevist has done a great damage to the bees.

But if each convent has an apiary, each village has or had one, or more, great domain where could be found an apiary installation where the latest methods were practiced. It is easy to imagine what has been the fate of those fine apiaries, in the universal plundering. The country people, seeking personal gain, divided the colonies among themselves and, in their ignorance, often allowed the colonies to perish. So the bees also have been victims of the revolution.

In order to safeguard them against dust and bad odors, the bees, in Russia, are nearly always located at some distance from the cities and villages. They place them often in open forest, in clearings made for the purpose, in the quiet and peace which they enjoy. Either the monk or the peasant, as the case may be, lives by the apiary, and if the bees are wintered there, he spends the whole year near them.

As to the kinds of hives used, they are not very varied. It is first the old national hive, made of a hollow basswood trunk standing on end. The weather, which gives to wood the color of stone, causes these hives to resemble monuments and likens the apiary to a celtic graveyard, of which the monk might be considered the guardian Druid, accomplishing the rites of his faith. I remember that one day, while on a botanical excursion, I found myself suddenly in the midst of the forest, at one of these apiaries belonging to the convent of a small district of Kazan. I thought myself suddenly transported, twenty centuries back, to the celtic epoch.

As might be expected, these primitive hives are steadily giving way to better hives, especially the Dadant hive, and in less number, the De Layens hive. As a rule each apiary is placed under the protection of some saint, whose image is fixed above the gate of the enclosure, or sometimes on a post. Often they place a small "icon" or holy picture, under the roof of a hive which needs particular attention.

While visiting a renowned apiary once, I saw at the gate of the enclosure, which was very low so as not interfere with the flight of the bees, a pretty little structure of brick in the shape of a chapel, which contained an image of St. Serge, protected with a pane of glass. From this miniature building a streamlet of water was running upon a slanting board in which gradins had been chiseled, to spread the water upon the width of it. It was the watering place of the bees, and I recognized that this was much more pleasing to them than the long troughs upon which straws are laid. Was it an invention devised by the saint himself, or only by his deacon who cared for the apiary? Did he thus find out the secret of having the greatest possible number of his bees working under the eyes of their patron saint?

This apiary was composed of about 100 colonies, with movable frames. There was active work in that enclosure. Overhead, on the basswood trees, the bees were very busy; below, near the ground, they passed in quick flight, bolting out towards the woods, the fields, the gardens, and coming back swiftly. Woe to the intruder who got in their way. Several times, before reaching the pretty little house of the apiarist, I had smarting testimonials of their welcome.

One day I was complaining of the angry disposition of the Russian bees. An apiarist answered with conviction: "Russian bees are brave, but if you fear their stings, go to the hives that have Italian bees. Those are mild, with the imprint of the effeminate civilization of the Occident?" It is a fact that the temper of the Italian bees, which I thought cross in Switzerland, was angelic as compared to the temper of Russian bees.

But let us return to that apiary, with its little chapel, its waterfall, its active work and its deacon, who was lying in the hallway of his house on a bundle of dry grass when I knocked at the door.

"Eh! Brother, wake up. I come to see your apiary. Will you let me rest a moment here? It is so hot!" "Will you have something to drink?" said he, at once. "It is very thirsty on the road."' "With pleasure." As he rose to go to the cellar, he turned to me and asked me in a very solemn way whether I was alone. "Yes, I am alone." "Very well" He went out and came back promptly with a bottle of honey mead, on the surface of which moisture was condensing. "Oh," said I, "That bottle is too large. I told you I was alone." "It was not on account of the drink that I asked you whether you were alone. I was afraid there might be a woman with you.' "And what about it? are you afraid of women?" "No, but I do not like women in the apiary. I never let one enter for fear of giving bad luck to the bees." I was amazed. To be afraid of a woman coming to an apiary is to carry Paulinism to an extreme point. But our apiarist was a deacon, and he perhaps had had some personal experiences; unless it be just a prejudice which is carried very far in those backward regions.

On the other hand, if there are prejudices concerning the presence of the fair sex in the apiary, we must acknowledge that the "babas" or peasant wives give the men to understand clearly that they should have nothing to do with the cows. One day, in a small village, where the family which I visited owned an isolated farm, I took upon myself to show my ability in milking cows and took possession of a milking stool. A man, milking a cow; what a scandal! What pleasure can that Franzoze find in milking? They must be Godless people! While the cow was conscientiously switching the flies and transforming my clean face into mosaics, the women and children were approving her. However, when I arose with a bucketful of milk, I felt sure of securing the approval of the witnesses. On the contrary, when I attempted to empty the pail into the receptacle which was used for that purpose, the woman took possession of it and handed it to a young girl. "There, go give that to the calves." Lucky if the calves don't refuse it, also, thought I.

However, as far as bees are concerned, I once saw a very fine apiary which belonged to the wife of a doctor at Kliottschi, near Kasan. She cared for them herself and demonstrated that bees thrive even better under the care of women than that of men, for she harvested better and larger crops than the neighboring beekeepers.

As to the methods followed for the management, it is, in Russia as with us, a matter of experience following the experiences of others. I saw with great pleasure that the writings of Mr. Bertrand, of Nyon, were an authority among them, that the translation of his work was in the hands of many advanced beekeepers. For when the bee owner was a convinced adept, he did not hesitate to spend money, and one could see in his apiary all the modern improvements.—Ph. Jeanneret (Bulletin de La Suisse Romande). Translated by C. P. Dadant.

(To be continued).

Why we need extension men

## WHY WE NEED EXTENSION MEN

The picture tells the tale, but I will endeavor to explain it. I visited the above back-yard and found the bees had drawn the comb out across the frames to an angle of 45 degrees, and it was impossible to remove the frames, so I removed one side of the hive and cut the comb out with a large knife. I found in one hive a few bees and a queen; the bees had dysentery and there were hundreds of moths. The entrance to the hive was seven-eighths inches high, winter and summer. In the top of this hive, which was a story and a half (hive with a shallow super), on top of the frames was a mouse nest with seven young mice. The hive was an old one and the comb showed signs of mildew. This man was glad to have a man visit him to show him his errors, and now he is an up-to-date back-yarder, with clean bees, straight comb, and will get some surplus honey this fall.

ALTON L. LOGAN,
Edwardsville, Ill.

## HONEY AND ICE CREAM

Albert Peglow, of Brillion, Wis., writes to call our attention to the fact that a teaspoonful of honey mixed with a dish of ice cream greatly improves it. Beekeepers have not paid sufficient attention to cultivating a market for their product through the ice cream parlors. A honey sundae makes a delightful dish, and once eaten, the customer will call for it again. Beekeepers can well afford to furnish placards reading as follows:

"TRY A HONEY SUNDAE"

and give some special inducement in the way of price to start with, in order to induce the soft drink establishment to place it on sale. In a few places, honey with ice cream has come into use and has proved very popular. Should such a use become general it would increase the market for honey to an enormous extent.

### MEXICO BEEKEEPERS AT DALLAS

Pledges were given for the co-operative introduction of American beekeeping appliances into Mexico and the international marketing of honeys from both Mexico and the United States, as a feature of "International Day" at the Texas State Fair at Dallas, Saturday, October 16. The beekeepers of the United States were represented at the reception of Mexican officials and beekeepers by Kennith Hawkins, of the G. B. Lewis Company, and E. G. LeStourgeon, of the Texas Honey Producers' Association, of San Antonio.

The Mexican beekeepers were represented by Enrique Veraja Rubio, Assistant Secretary of the Republic of Mexico, and Governor Lic. Alfonso M. Basaldria, of the State of Queretaro, who also spoke for Guillermo Brondo, in charge of bee culture investigations at Mexico City, who could not be present. Mr. Le Stourgeon addressed the Mexican delegation in their own language and extended the felicitations of American beekeepers.

As a result of the conferences which followed between officials and business men from the sister republic, arrangements have already been made for the co-operative marketing of Mexican and American honeys and the importation into Mexico in quantities of American made bee supplies.

Beekeeping in Mexico is receiving the attention of agricultural officials, and the government is issuing literature and carrying on extensive experiments at the apiaries of the Republic and in several States. Beekeeping appliances and samples of honey formed a part of the 1700 separate articles exhibited at the Dallas International Fair, which were brought from Mexico City by the Government at the expense and courtesy of our sister Republic. Among several of the business men who attended the conference were those who are actively engaged in commercial beekeeping and the introduction of better methods for honey producers into Mexico.

### THE MINISTER'S BEES

Once when visiting an old beekeeper of 70 odd years in the Yorkshire East Riding, he told me over a pipe alongside the hives that a new minister came to their parish and started beekeeping. When visiting the old Yorkshire man, the minister was informed that his bees were robbing the hives of his host. "Robbing, my bees robbing? Never; they wouldn't do such a thing." "But wouldn't they?" said the old man, "I'll show you, then." He thereupon called "young" Amos, who himself was 40 years old, and told him to take a flour dredger to t'parson's and dredge t' bees as they came out of their hives. Surely enough, in a few minutes came many floured bees intent on securing cheap honey. Of course the minister was very much surprised and pained to find that he harbored thieves at the vicarage.—W. S. Turner, in The Bee World for August.

### SUGAR SUBSTITUTE MADE AT HOME

We who keep bees may well count ourselves lucky in these days of sugar shortage.

We needn't have that guilty feeling when we are satisfying that "sweet-tooth" longing. The following is a most delicious confection, made without white sugar:

**Ma' Honey Penoche**

1 cup honey, 3 cups brown sugar, ¾ cup of top milk, 2 tablespoons butter or nut butter (nucoa), 1 cup chopped nut meats. Boil honey, sugar and milk to the soft ball stage; add butter and boil one minute longer. Put the pan in cold water; when partly cooled, beat until creamy. Add nuts when it begins to harden.

We may use honey for sweetening ice cream, custards and all puddings. In any recipe requiring baking powder, a pinch of soda should be added to neutralize the acid contained in the honey, otherwise we unbalance the sodium and acid ingredients of the baking powder, thereby rendering the cake, etc., heavy. Then, too, one should use one-fourth less wetting and rather scant measure of honey. Our little folks are much better off when fed honey sweets, as it is much more easily digested than sugar, and contains materials for the building of their little bodies.

They love tapioca pudding made by soaking ¾ cup pearl tapioca in 3 cups of water over night. In the morning pour off and add 2 cups boiling water. Cook until transparent, add pinch of salt, ¼ cup of honey, ½ cup any tart jelly. Serve plain or with cream.

MRS. G. C. COFFIN,
Seattle, Wash.

# BEEKEEPERS BY THE WAY

### Atkins of U. S. A.

E. M. Atkins is a much traveled bee-man. As a young man he left England and started life as a farm hand in Ontario. There was a good-sized apiary as part of the farm equipment and Atkins soon became interested. He then studied beekeeping at the Ontario Agricultural College under Morley Pettit. Next we find him as assistant to the Dominion Apiarist on the Government Farms at Ottawa. It is a long jump from Ottawa to Iowa, but soon Atkins is found busily at work as research assistant at the Iowa Agricultural College.

Phillips always has an eye open for good men, and it was not long until he picked on Atkins for a member of his extension force, with the four States of Iowa, Missouri, Kansas and Nebraska as his territory. After spending some time in this field, inducements were offered by the Iowa institution to have Atkins work in that State exclusively. For the past two years he has traveled back and forth over Iowa, until he knows pretty nearly every flag station in the State. His apiary demonstrations have attracted much favorable attention. In several backward communities Atkins has taken over a portion of the apiary to run according to approved methods, while the balance is conducted by the owner as usual. The results have been so striking that great improvement in the beekeeping in these localities is bound to result.

On November 1, Atkins left Iowa to become extension agent for the G. B. Lewis Company. His field will now be the whole United States, with headquarters at Watertown. When beekeepers need a practical man for a place on their program, they will do well to write to Watertown and ask that Atkins be sent.

E. M. Atkins

## BEST TREES FOR SHADE AND HONEY

We have been asked for a list of the best trees for planting for street and ornamental purposes, which at the same time will furnish nectar for the bees. Every section of the country has a few trees particularly well adapted to its climatic conditions. Some of these are worth trying over a wider area.

The maples thrive over a very wide scope of country and although they bloom very early, are extremely valuable as a source of nectar. The hard maple makes a particularly fine tree. The willows are adapted to every section of America, from the extreme north to the Rio Grande Valley. They produce both pollen and nectar. While the willows do not make attractive shade trees, they are rapid growers and serve well for windbreaks and such purposes.

There is no finer shade tree than the American elm, and the bees fairly roar among its blossoms when the weather is favorable. It is of principal importance as a source of pollen, however.

The basswood or linden is one of the best-known trees which furnishes honey in surplus quantity. It is native of the Northeastern States and is found as far south and west as east Texas. It makes a very desirable shade tree and where a sufficient acreage is within reach the bees gather large crops of basswood honey. The European linden is also planted quite generally in some places for shade and ornament, and is, perhaps, of equal value to the bees.

The tulip tree, commonly known as the tulip-poplar, is found over a large scope of country in the East. It is a beautiful tree, with large and showy blossoms which yield nectar profusely. It is planted successfully as far northwest as Iowa.

The sourwood tree of the Carolinas and Tennessee and adjacent regions, is one of the best for honey. Although seldom planted in the North and Middle West, it is well worthy of trial in these regions. The tupelo-gum is a wonderful source of honey in its native habitat. It is grown successfully as a lawn tree in Iowa, though seldom seen in the North. The persimmon tree furnishes shade, fruit and nectar. The writer has one growing on his home grounds in western Iowa. It is worth while for several reasons. Although the magnolias or bay-trees are probably not as valuable for the bees as some of the others, they are very attractive trees, with showy bloom, and the bees sometimes visit them freely. Although not commonly planted much north of Knoxville, Tenn., some species can be grown in Iowa and Illinois and other States with similar climate. Iowa is mentioned as the extreme limit of a number of these trees because the writer happens to be familiar with Iowa conditions and knows them to be growing there. Others can judge whether they are likely to succeed in a particular environment by comparing it with the native home of the various trees. In the extreme south and west a different list would be needed, since they are able to grow so many things which we who live in the Middle West must forego.

"It is well worth every beekeeper's while to encourage the planting of trees which are attractive to the bees, on lawns, along streets, and in parks and cemeteries.—F. C. P.

## BEES ON A SMALL FARM

The photograph is of John Burgschat and apiary, near Florence, Neb., taken June 9, 1920.

Mr. Burgschat has had a colony or so of bees for several years but never gave the honey business any great consideration or attention until 1919. He joined the County Honey Producers Association, became interested in Bee Culture and is now well on the way to successs as a beekeeper. There are 25 acres in the farm under his supervision and it is devoted to haising small fruit, vegetables, some corn, oats and alfalfa. He is also a breeder of fancy White Plymouth Rock and Black Minorca chickens.

There were five colonies in the apiary last year. One of these was purchased in the spring as a two pound package. It was transferred to the hive April 25 and produced in the season 248 pounds of comb honey. Fifteen 2-pound packages of bees were gotten from the south this spring and by hatching a few stray swarms he now has 25 colonies.

EARL W. MAXWELL.
Douglas County Agricultural Agent.

Apiary of a Nebraska farmer

## SOME IDEAS

By A. F. Bonney

Cement-coated nails are hard to get at present, but are easily made in this way:

Take one ounce of boiled linseed oil and three of turpentine, mix in a shallow dish, say a milk pan, and then dump in a pound of rosin that has been pounded rather fine, which may be done by enclosing it in a piece of cloth loosely and pounding it with a hammer of mallet. Let it stand, covered tightly, for a day, and best in a hot room.

You will now have a sticky mass into which the points of wire nails may be dipped for a quarter of an inch or so and then driven into place. It will hold as well as the commercial article. Lath nails are not too coarse for general work.

### Insecticides

Bisulphide of carbon is expensive just now; it is very volatile and explosive, and the fumes are very heavy, which gives the bottom of a pile of hives the bulk of the benefit.

Make a pile of hives, and on top of them put several thicknesses of newspapers; put on an empty, shallow super, then with a darning needle punch holes around the edge and scattering throughout the rest of the paper. Now scatter an ounce or two of flake naphthalene on the paper and then set in a shallow dish and into it pour a couple of ounces of the bisulphide.

Accidental cracks may be plastered with clay, similarly to Dr. Miller's method of preventing leakage.

Experiments seem to show that this is an infallible cure for the moth-worm evil.

### Honey Prices

I recently sent out 100 letters to beekeepers about prices, and the replies indicated that 20c was the lowest wholesale price, and 25c the highest, while 30c was the low retail price and 45c the highest.

Will the time ever come when honey producers will quit cutting each other's jugulars? Farmers get a uniform price for their product, which fluctuates, of course, but one does not see one man selling corn at $1 a bushel and another at $1.50.

### Comb Honey

Last season I sold all the comb honey in 4-pound shallow extracting frames I could produce, and have a great demand for it now. Last year I received 30c, this year 40c. To deliver it I cut a piece of heavy cardboard so that it will cover the bottom and both sides of the frame, tie a string around it, and it carries very well. A wrapping of paper prevents dripping. I look to see this package very popular in the near future, for local trade.

### Conditions Here

A heavy white clover flow commenced here about June 10th. The bees worked about half the time, on account of rain, but July 11 I appeared to have an average of 100 pounds to the colony, and increased 63 per cent, almost entirely with captured swarms, which introduces a new wrinkle.

### Decoy Hives

This season I sent decoy hives to farmer friends with a note, telling them if they would put the box up a tree and catch me a swarm I'd come after it and give them a can of honey. So far I have secured twelve swarms, the smallest of which weighed three pounds, the largest six. I caught eight myself.

Buck Grove, Iowa.

## BEEKEEPING IN WESTERN CANADA

By Norman S. Rankin.

With the exception of British Columbia and Manitoba, beekeeping in the west can hardly be said to have attained the status of a prosperous industry, though the great interest aroused of late years would indicate a more general following of this interesting branch of farming on commercial lines. What has been indisputably proven is the adaptability of the prairie provinces to successful honey production, and that every farmer in western Canada can profitably handle a few hives for his own domestic production.

Canadian honey is unsurpassed in quality by that of any country. Owing mainly to the warmer summer and abundance of nectar-producing flowers, the average yield per colony is greater than in the British Isles. Bees can be raised and honey produced as successfully in the west as in the east. The natural bloom of Alberta, throughout the season, affords abundant food for the bees, and the alfalfa fields of the irrigated districts of the south, and clover fields of the central and northerly sections, give adequate supplies of nectar and pollen for countless hives. In British Columbia, conditions are naturally excellent, especially in the fruit districts, and honey production in the Pacific province is increasing yearly. In Saskatchewan apiaries are successfully operated in many parts of the province, while Manitoba is fast forging ahead as one of the leading beekeeping provinces of the Dominion. In the latter province apiaries are to be found where many tons of honey are produced annually.

Experimentation carried out by the government experimental farms discovered the following net production per colony of bees and honey in the different provinces: Brandon, Man., $3.27; Indian Head, Sask., $11.83; Lethbridge, Alta., $16.49; La Combe, Alta., $12.79; Invermere, B. C., $13.26; Summerland, B. C., $11.81.

The production of British Columbia in 1919 was 344,580 pounds of honey, there being 1,855 beekeepers and about 10,000 colonies in the province. Manitoba, in 1918, with 921 beekeepers and approximately 15,000 colonies of bees, produced 944,104 pounds, or 64 pounds per hive. In the Kootenay district of British Columbia alone last year 23½ tons of honey was produced the average surplus per hive being 50 pounds, as against 38 pounds for the whole province. One Slocan Valley farmer had a surplus of 2,100 pounds from three hives.

As a proof of the adaptability of the Alberta climate to bee raising and the profits to be derived therefrom, the experience of an Edmonton farmer may be cited. Starting out six years ago with a swarm of mixed bees, he managed, by importing high-bred queens, to so improve his stock that in a few years he had an almost pure-bred strain of Italian bees. He keeps from ten to fifteen hives and disposes of the increase in the spring or fall. In the year 1919 the 9 hives he possessed in the spring increased during the summer to 21, and the honey produced, less that required for winter feed, was 827 pounds, which sold at from 35 cents to 40 cents per pound. In 1913 the record of production from this apiary was 100 pounds per hive, or at prevailing prices a revenue of $40 from the honey of each hive.

Everything goes to show that bee culture and honey production are on the increase throughout the west. The Manitoba Beekeepers' Association, established in 1903 and reorganized in 1914, had 921 active members in 1918, with 15,000 colonies of bees; and the Beekeepers' Association of British Columbia, 1,183 members, with 6,830 colonies. There is also a Kootenay Beekeepers' Association.

This colony yielded one division and 196 sections of honey. The division yielded 75 pounds, making, in all, 271 pounds from one colony at beginning of season Apiary of L. Madsen, Gardner, Ill.

## CLIMBING BONESET, OR DUCK BLIND

Dear Mr. Pellett: The climbing boneset (**Mikania scandens**) grows in great natural arbors along the Kankakee marshes, forming festoons over the bushes. It is known among the people of the region as "Duck-blind." The vast marshes along the Kankakee appear to be a good honey-producing region, and the duckblind, with its roots in the moist soil and its flowers high up in the air, should be a good nectar-yielding plant. If there were no danger of its becoming a nuisance it would be worthy of introduction in the low grounds among the willows that fringe other rivers. It seems to have a wide range, according to the botanies, but little seems to be known about it among the beekeepers.

H. WALTON CLARK,
Fairport, Iowa.

My first introduction to the climbing boneset was in the Mississippi River bottoms in Arkansas, across from Memphis, Tenn. A party of local beekeepers went across the river to visit an apiary, with W. E. Drane as pilot. We found the bees working hard on the climbing boneset and apparently getting a good deal of nectar. None of the beekeepers in the party knew what it was. Later I found it growing in great profusion in many localities in Mississippi, but apparently few of the beekeepers were familiar with it. So far I have been unable to find any reference to the plant in the literature, and Mr. Clark's letter is the first reference to it that has come to this office. It is mentioned incidentally in the article on Tennessee in the November Journal.

Although the plant is said to occur in swamps and moist places from New England and Ontario south to Florida and Texas, it is evidently not common over the greater part of that area, else it would be better known. It is said to occur also in the West Indies and South America. The bloom is similar to that of other bonesets, and the season seems to be about the same. It was about the first of September that we saw it in Arkansas and Mississippi. It grows luxuriantly, climbing over fallen logs, fences, weeds and other objects of support.

Mohr states that it occurs in low, damp thickets from the mountain region to the coast plain of Alabama, but that it is most common in the lower pine region and the coast plain.

There are a large number of related species common in South America, especially in Brazil.

Since the above was written a sample of this same plant has been received from Jess Dalton, of Bordelonville, La., with the statement that it is one of the best honey plants in that locality. He states that there are acres of it, literally covering shrubs and logs in marshy places. It is called potato vine and pomme de terra in this region.—F. C. P.

## KEEP YOUR FEET ON THE GROUND

By H. B. Turrell

I always pay close attention when the Dadants are talking about their own bees and business, and think the readers of the Journal would, perhaps, like to hear more about their apiaries; so I am going to suggest that they might arrange to run a series of articles, which might be called "A Beekeeper's Log," throughout the year, giving their readers an intimate account of everything that occurs in their own bee-yards in that length of time.

From my own experience, I think that what the beginner lacks most is a comprehensive view of the various operations carried on in beekeeping, giving the when, why and how of the game.

My impression is that the average amateur gets his head heated up with facts and fancies until he cannot tell the white things of practical beekeeping from the blue things of speculative apiculture—in plain language, the amateur should be taught to keep his feet on the ground.

And just here allow me to suggest that the novice is the greatest source of joy and and the greatest curse of the beekeepers. Witness: (a) the questions in the "Questions and Answers" column. (b) how hard it is for the beekeepers to get a decent price for their product; (c) the spread of foulbrood throughout the country.

Maryland.

I am certainly thankful for your very complimentary letter. We love to be appreciated, as every human being surely does.

The reason why we do not give more of our own experiences is exactly because, as you put it nicely, the average amateur—in fact the average man—may "get his head heated up with facts and fancies . . . . and should be taught to keep his feet on the ground."

If we were to dwell on ourselves too much, it would be a "one man's" journal and would probably lose some of its interest. In fact, it would be sure to do it. An editor needs to be constantly reminded of the necessity of "keeping his feet on the ground," and the best way to do this is to publish experiences of others, whether successful or unfortunate. We learn from both experiences, and, besides, we ascertain that we are not the only successful ones.

The novice occasionally causes an experienced beekeeper to shrug his shoulders, at the simplicity of his questions. But he points out to us where the greatest failures happen. So we hope novices will read this paragraph, and take heed.—Editor.

## HONEY AT THE GLENN COUNTY FAIR

By Dora Stuart

"When the golden-hued October
Tells us we have time to spare,
We'll just yoke up Buck and Brindle
And Whoa! Haw! Gee! to the Fair."

So runs a song of forty years ago. As a means of locomotion, Buck and Brindle have long since been replaced; but the rollicking autumn spirit is still displayed by the increasing numbers who "steer" various motor-propelled vehicles, not only to the fairs held in their own counties, but to those held in adjoining and even distant counties. Thus, on September 29, notwithstanding her thin soles, we "yoked up" Liz and "Forded" our way swiftly, though cautiously around sharp rocks, lurking ruts and over precarious bridges of unfinished highways, from Chico, Butte County, California, to view the fair, and particularly the agricultural booth, at Orland, in the neighboring county of Glenn.

Apicultural booth at Glenn County, California, Fair

Bee friends from Butte County were already at the honey booth. So were bee friends met the previous year. Dr. Sayler, Bee Inspector of Glenn County, was again in charge of the exhibit and the largest contributor to it. Indeed, Dr. Sayler may fairly be called the father of beekeeping in that county, in the sense that his energy and devotion are the principal factors in promoting the growth of the industry and the standardizing of its products.

The honey exhibit, the second for Glenn County, was a distinct improvement over that of last season, both in variety and the taste shown in arrangement. It consisted of honey—white, light amber and dark amber—wax, live bees, modern equipment, and a special exhibit of foulbrood combs.

The prize winners were:

Comb honey—R. H. Yearnshaw.
Extracted honey—M. A. Sayler.
Beeswax—R. H. Yearnshaw.
Sweepstakes—M. A. Sayler.

The judges who made the awards were:

W. H. Dickenson, Manager Department of Apiculture, Diamond Match Company; Charles Edson and J. E. Edson, his nephew, of Butte County, where they operate large apiaries both for queen-rearing and for honey-production; and C. D. Stuart, Chico.

The sources of nectar in Glenn County are practically the same as those of Butte County—star thistle, alfalfa, fruit bloom and miscellaneous wild flowers.

As a whole, the display was convincing illustration of the development of the beekeeping industry that is sure to follow the dividing up of the large land holdings in California. For, until twenty years ago, Glenn County was owned almost entirely by one man, who leased it to renters in large tracts. But with the sale of the land to small farmers, and the recent provision by the Federal Government's Stony Creek reclamation enterprise, of adequate irrigation facilities, apiculture, along with other industries of little landers, is beginning to come into its own.

The character of settlers that such enterprises invite, is witnessed by the unusually creditable display made at this last fair. Although housed in a tent, the exhibit was worthy of an older community, in which alone apiculture can thrive.

California.

## THE KINGBIRD

Several letters regarding the kingbird have come to this office recently. Since the birds are not as plentiful as in former years much less is heard about them than in the past. Some beekeepers favor shooting the birds on sight, while others would protect them. From the writer's observations, he is inclined to think that the bee-catching habit is not so common as is believed. Fred Slocum, of Michigan, writes that when one gets the habit of catching bees he kills it, but otherwise he lets the birds alone.

Howard Minnick, of New York State writes a very interesting account of his observations, showing a number of cases where the birds have been quite destructive to the bees. He mentions having seen a kingbird fly into a swarm of bees. The bees returned to the hive without clustering and swarmed again on the eighth day. He thinks that in that case the bird caught the queen.

The writer had one or more families of kingbirds living about his apiaries at Atlantic, Iowa, for a number of years, and watched them closely. It was very rare that he was able to suspect one of the birds of catching bees. Considering all the evidence at hand it appears that occasionally a kingbird will form the habit of catching bees to a serious extent. Such a bird should be disposed of. However, generally speaking, the kingbird is valuable about the farm and garden, as it lives, for the most part, upon injurious insects. The individual which is destructive should not bring distrust upon the entire species.

## NOTED BEEKEEPERS

Would you please give information in the Bee Journal concerning Berlepsch and his hive, Kanitz, Dzierzon and Gravenhorst?

PENNSYLVANIA.

August Von Berlepsch was born in Seebach, Germany, in 1815. He was so fond of bees in childhood that he was given a hive of bees when he was 7 years old. In 1841 he had over 100 colonies. In 1855 he invited the two celebrated scientists, Siebold and Leuckhart, to come and make experiments upon the Dzierzon theory of parthenogenesis, in his apiary. In 1860, he published his book "The Bee and its Production in Movable-Frame Hives.' The hive of his invention is of movable frames, but opening at the rear, and the frames have to be pulled out with pincers, for the ceiling of the brood-chamber is immovable. Even at present, the unwieldy pincers which he used to draw the frames out of hives are still offered for sale by some European manufacturers of bee supplies, and his hive is still used by many in Germany and German Switzerland, though it is very inconvenient.

Berlepsch was really only an active supporter of the Dzierzon ideas, though he first opposed him on many points. Most of the above facts were taken from L'Apicoltore of April, 1877.

J. G. Kanitz was a writer on bees who published "Beekeeping for Honey and Wax," 1853-60, at Henrichsdorf, Prussia (now Poland). He published also a Prussian bee magazine at Koenigsberg, about 1860.

Dr. Johann Dzierzon, a Catholic priest, was born at Lokowitz, Silesia, January 16, 1811. He was the original discoverer of parthenogenesis in the honeybee. He began writing on bees in 1844 and published his first book "Theory and Practice of the New Bee Friend" in 1848. From 1854 to 1856 he published a monthly magazine entitled, "The Beekeeper of Silesia." In 1861 he published his best work, "Rational Beekeeping," which had numerous editions and was translated into English, in 1882, by H. Dieck and S. Stutterd, and published in London by G. N. Abbott, then editor of the British Bee Journal. Dzierzon's hive was a hanging-comb hive, or bar-hive, in which the combs were hanging from a top-bar. A side door permitted of their being cut loose from the walls at either end. He wrote, page 53 of the English edition: "Under the covering of the hive are separate small, thin and narrow pieces of board, from which the comb which is to be removed is suspended, which are taken out and the combs attached to them of course accompany them, they having previously been loosened from the side walls."

It is to be wondered at how, with such inconvenient hives, he could make the discoveries which are now universally accepted and are no longer theories.

Dr. Dzierzon lived 49 years of his life at Karlsmarket, Silesia, where he made all his important studies. He died October 26, 1906, at Lokowitz, Silesia, his birthplace, aged 96 years.

C. F. H. Gravenhorst, of Braunschweig, Germany, was a writer on bees who invented a movable-frame hive of straw, the frames of which were in the shape of an oblong half circle. This hive is illustrated in the Dadant-Langstroth book, "The Hive and Honeybee." Mr. Gravenhorst published, for a long time, the "Illustrierte Bienenzeitung." He was a contributor of the American Bee Journal in the seventies, and also of divers European bee magazines. He has nothing important to his credit, in the way of discoveries.

## BEE NOTES

### The Sentinel Bee

By Rev. A. A. Evans

The alighting board of a hive, to the bee lover, is always an object of interest. During the daylight hours of hot summer months there is an incessant coming and going; and unless the bees are of an unusually cross-grained strain, at the busy season they are completely indifferent to the watcher, if he does not intrude too closely. But should he trespass too far on the tolerance of the workers he will become aware of a rush of two or three bees, making threatening circles around him and a distinct hiss which is a warning to be off unless he has previously guarded himself with a veil. These are the sentry bees—sentries which guard the hive entrance night and day, just as in olden time soldiers guarded the gates of human cities. Go wherever you will, however eager the bees may be with honey-getting, there are always some told off, two or three, to guard the entrance, and should the danger approaching seem to them a formidable one, by a note or sign, at once there is a rush from within of assistants to wage a defensive war.

### The Ventilators

Also observable during hot and sultry days is the small regiment of bees engaged at the hive entrance in ventilating. There is no mistaking them. They seem like wingless insects, so swift and incessant is the beat of their gauze appendages, and in the night, when the alighting board is free of the throngs coming and going, and when all around is still and calm, the vibration of wings of these ventilating bees sounds in the ears like the distant roar of the sea.

### Thought-out and Scientific

And notice, the ventilating bees do not stand in a loose, disarranged group, but in orderly files, one behind the other, thus catching and drawing a steady in-draught and steady out-draught. There are usually two groups, one just outside the hive entrance and one just inside, and beside these, during the time of great heat, there are parties of ventilators at regular intervals and regular lines, up to the combs; and if the watcher suspends close to the opening a thread of wool or of cotton, the strong sway of the current is at once seen and unmistakable.

### Sanitary Experts

Bees need, like human creatures, fresh, pure air, and unlike many of the human kind who would live in a corked bottle if they could, they are at great pains and trouble to ensure it. Indeed, a beehive is a most wonderful lesson in a scientific ventilation. Here is a city packed such as is unknown in the most crowded human city, and yet living through the heat of summer and cold of winter with a temperature uniform and equable and with breathing air unvitiated. How is it done? The method might be worth the attention of some of our sanitary experts. For bees obtain their fresh air by what may be called a rotary system. They hate the through draught, that is, a cold current passing vertically through the hive. Their method is to combine the movement of fresh air with warmth, and to do this the watchers at the alighting board will see that the ventilating bees are always at one side of the entrance, never the center, and the fresh air is passed in at one side, made to circulate round the walls and then passed out again at the other side of the entrance; and during exceptionally hot weather, another company of bees can be seen fanning out the vitiated air.

### The Sound of Far-away Sea

In so assiduously circulating pure air, bees have three important purposes in view: good air for breathing; to keep an even temperature in the hive, and to drive off the evaporation which arises from their bodies and from the honey they are brewing in their nectar vats.

There is no more interesting sight to the bee watcher than to stand outside a hive on a hot summer night and see the ceaseless beat of wings from the squadron of ventilators. Notice their orderly lines, one going and making way for another, for the work is hard and cannot be long sustained by the single bee, and listen to the subdued roar like waves falling on the distant beach.

### A Hint to Beekeepers

Bees are often caused unnecessary suffering by the beekeeper who thinks he is wiser than his charges. The supers and brood nest of the bees should always have warm covers on top. Extra ventilation should only be given by opening, in hot weather, as widely as possible, the entrance blocks. A light covering only, on the top, involves to the bees more or less of vertical draught, and to the beekeeper it means a loss of honey, for the bees will never enter the supers unless they are kept warm and free from a down current.

England.

## BEES IN THE CUT-OVER COUNTRY

### The Success of the Apiary in the Forest Region of Cloverland

By L. D. Tucker.

Ever since the hum of the saw-mill first pierced upper Michigan's dense forests of hard wood, a half century ago, the problem of the profitable utilization of the idle, cut-over lands thus created, has been a source of endless research and study.

There have been any number of suggestions, and a few of these are now in operation. But when, just three years ago, statistics revealed the fact that there were over 8,000,000 acres of idle cut-over lands in the peninsula, the lumbermen and other big landowners began to sit up and think. "What are we going to do with it?" they asked. And then and there began an energetic campaign for almost any type of industry which dealt in cut-over grassed lands.

First came the grazer. A two-years' publicity and advertising campaign among the sheep and cattle sections of the west brought 50,000 head of sheep and 5,000 of cattle, with some 50 settlers, and they colonized, in all, approximately 100,000 acres of cut-over lands. But 100,000 is the merest fraction of 8,000,000 and, consequently, the work is only just begun.

And now comes another important feature, and one which might easily surpass the other in its relation to the more rapid growth and progress of the idle acres—beekeeping.

We sort of happened onto it, a very short time ago, while making an automobile trip to the village of Iron Mountain, Mich., where Henry Ford and son are establishing a mammoth body manufacturing plant. We pulled into the village about one hour ahead of schedule, and decided to run out beyond the limits for a short distance and look over the site of the proposed plant.

We had gone about a mile and were rounding a sharp curve, when there appeared on the side of a hill, to the right, what seemed to be three or four long rows of bird houses, perched up on stakes and nestled there among the trees as though to invite the most exclusive of the feathered tribe. We slowed up to view the sight, and then distinguished a huge sign board at the juncture of a road which turned sharply to the left, leading into the "bird house" colony. The sign read: "Eskil's Apiary."

Being more of a "news hound" than an agriculturist or a bee farmer, the sign meant little to me, and, in fact, I went so far as to ponder upon the possibility of having suddenly come upon an ape-breeding farm, a zoo or something of the sort. Imagine my surprise, then, when a mere roadside urchin informed me that: "That's where they raise them stingers.' It was a bee farm.

I had never seen a bee farm before. It was something entirely new to me. Recollecting certain eventful days in my youth, I admit painful familiarity with the buzzing species, but the thought of hazarding one's physical comfort to the extent of actually cultivating the bee had never occurred to me as a very healthy occupation.

But, armed with the reporter's curiosity, I turned into the road and drove up to the house. Finding no one at home, I walked towards the "bird houses" and encountered a rather curious sight. It, or she, was a middle-aged person, and at first sight I wondered whether or not I had intruded upon a bridal party, for she was draped from head to foot in a long, trailing veil of what appeared to me to be nothing more nor less than mosquito netting. The long, elbow-length gloves added to the "bridy" appearance.

"Pardon me, but—," I began.

"Oh, that's all right," she broke in cheerily. "Just stand back far enough so they won't see you, and you won't get bit." I looked around hurriedly for "they," expecting to see nothing more nor less than a pair of broad-chested, long-toothed English bull dogs, or, worse yet, a playful cub bear or two—but saw neither. A second glance, however, prompted me to take a sudden step backward, for, from the nearest "bird house" there arose a black cloud of the fattest, buzziest, busiest bees I had ever seen. And as they hovered playfully over my head I looked almost plaintively to the kindly-faced person for help. I gazed warily once more, at the "bird house," and ventured a step forward. "I was just passing by, and noticing the sign, thought I'd drop in and find out what it was all about," I remarked.

"Well, to begin with, she replied, smilingly, "it's a bee farm—an apiary." I agreed, with a frantic swing at a huge drone which hung all too close to the end of my nose. "So I see."

"You might tell me, if you will," I began, "what you think of this country as a honey producer," and I neglected my friend the bee long enough to dig up my pencil and paper.

"Well, this particular spot here used to be ideal for cultivating bees and producing honey," she remarked, "but I'm afraid the community is becoming too thickly populated lately to permit sufficient open area for the bees to work in.'

"We have 110 hives," she remarked, placing her hand rather affectionately, I thought, on one of the "bird houses." And incidentally, right then and there I learned the "why" of the "bird houses." "During the past several years we have averaged $35 to $40 profit on each hive." A hasty mental calculation placed the aggregate at about $4,400. "This year, however, we were forced to move part of our apiary to a less thickly settled district. My husband is handling that end of it, and I am closing the season out here at the old stand.

"I believe that the open, cut-over areas are the best type of lands for the profitable raising of bees," continued Mrs. Eskil, busily scraping away on a comb which she had lifted from the hive. "You will notice that most of the open areas in this northern Michigan country are thickly covered with the different types of clover-alsike, June red-top and others. And the clover, of course, is the ideal stamping ground for the bee.

"In our several years of operation in upper Michigan, we have enjoyed excellent success. With very little extra help we have found time not only to care for our apiary of 110 hives, but to do quite a bit of farming as well,' and she waved a hand towards a narrow valley just beyond the house, where corn, potatoes and other truck crops appeared to be thriving in the best of manner. "And what's more," she remarked, emphasizing the statement with a brandish of the knife she was using, "Mr. Eskil has a photographic studio over there at Iron Mountain, in which he spends considerable time."

Nest of titmouse under cover of Dadant hive, at apiary of Ugo Lori near Florence, Italy.

"We have tried the bee game in other sections throughout the middle west," she continued, moving on to the next hive, "and experience has taught us that with a knowledge of the business the bee farmer can make good, on a big scale, in this cut-over country."

Just between you and me and the twelve bees that left me only when I sought refuge behind the wheel of my car, there is a future in bee farming for the upper Michigan farmer, if he will grasp his opportunity. It is somewhat of a "new thought" in the utilization of upper Michigan's 8,000,000 or more acres of clover-laden cut-over lands, and bee farming is going to be the subject of a widespread campaign among the farmers of northern Michigan from this time on.

Michigan.

## DEMAREE SWARM PREVENTION

In March I had a very heavy hive (A) with 8 frames of brood and some queen-cells fairly well advanced. I decided to try the much-advocated plan of "anti-swarming," thinking that a few days would not matter much, or at least could be easily redressed.

Another hive-body (B) was placed above A, and in it the old queen, (saved from a nucleus the previous autumn), 2 combs of young brood and the rest filled with frames completely built, and, of course, an excluder between.

The 10th day, or about, the queen-cells in A were all destroyed except the best one.

Soon began a series of adventures. On a fine day, the bees in A swarmed twice, clustered upon a privet at hand; but, finding that somebody had played "foul," returned home, ashamed of their misadventure.

Is not this the evident proof that the worker-bees swarm out of their own initiative, without guidance or "mot d'ordre" from the queen?

In due time the new queen in A had emerged and was doing pretty well, not troubling herself in the least with swarming. But the bees surely had gotten the fever and were always on the lookout for an outing. So another fine day they swarmed twice in the morning, and a third time at 2 o'clock. But, strange to say, after a while, they returned home, where there began an earnest fight, in which half a swarm was killed. I smoked them thoroughly till anger vanished. Calm having prevailed, I decided to make a thorough investigation of that queer occurrence.

Lo, on the bottom of A there were two queens being balled—an old one and a young virgin. The old queen I understood later, was the one of a small swarm which had issued just in the time when the bees of A were coming back. Both queens were set free, the virgin caged for a moment.

Fearing more mishaps with those bees, I determined to divide them and set them at peace. I opened the hive B and looked for the queen, but could not find her. I was at a loss. Reviewing the frames carefully, I noticed under the top-bar of the last frame a group of bees, very earnest at some business, like they are when after moths. There was my good old queen furiously attacked by her bees—playing "foul!" She must have the penalty. What to do? Thinking the new queen would fare better, I killed the old one and gave the new queen in a new hive (C).

Result: The three queens have been lost—two weaklings instead of a strong hive which could have stored 50 pounds of honey. Much trouble for nothing. Mais peut etre que la lecon vaut la chanson.

What do you think of that? There is much said for and against that anti-swarming plan. Perhaps the difficulty came from the circumstances when it was applied.

Shanghai, China.

Answer.—Undoubtedly the trouble came, as you say, from the circumstances. Had not another swarm joined this one, there would have probably been no fight. But two queens in one hive of two stories only, separated by a mere queen-excluder, will sooner or later cause trouble, especially at the end of the honey harvest. At best, the Demaree system serves only as a temporary prevention of swarming, if no unusual occurrence interferes.

In many instances, the bees of a colony with a virgin queen attempt to swarm when their queen goes out to mate. In such circumstances, however, they do not usually return, unless the queen herself returns.—Ed.

## HERE FROM PALESTINE TO STUDY BEE CULTURE

To study American methods of bee culture and honey production in order to introduce them into Palestine, Alexander Livshitz, of Jaffa, President of the Beekeepers' Association of Palestine, has just arrived in this country. He plans to spend four months in California studying modern agriculture, principally bee culture.

Mr. Livshitz, who is the leading bee cultivator in Palestine, heads a finely developed co-operative association, which has increased the number of bee hives in Palestine from 100 eight years ago, to 4,000 today. With the machinery he intends purchasing here, together with the new ideas he will take back with him, Mr. Livshitz declares his association will possess 20,000 bee hives within several years.

He expects to disseminate the information he will secure here by publishing agricultural texts in Hebrew, based on his California investigations, which will be distributed throughout Palestine by means of traveling libraries. Mr. Livshitz is a typical Eastern Europe Zionist, who studied agriculture in Russia in order to establish himself in Palestine and aid in developing it into the Jewish national homeland.—New York Post.

## ODDS AND ENDS

### Convention Dates

We wish to remind our readers of the dates of the following conventions which are held near together: Wisconsin at Madison, on December 2 and 3; Chicago Northwestern at Chicago, on December 6 and 7; Minnesota at Minneapolis, December 7 and 8, and Illinois at Springfield, on December 14 and 15.

### Minnesota Convention

The annual meeting of the Minnesota Beekeepers' Association will be held at the meeting rooms of the Medical Association, Donaldson Building, Seventh and Nicollet, Minneapolis, Minn., December 7 and 8, 1920.

OTTO L. WILLIE, Secretary.

### Illinois Convention

The State Association meeting will be held in the Leland Hotel, Sun Par-

Part of apiary of Ugo Lori at Pratolino, near Florence, Italy lor, at Springfield, Ill., on December 14 and 15, 1920. Rates $2.00 to $2.50 without bath; $3.00 and up with bath.

Program will be announced later. Try to be with us and enjoy yourself; if this is not possible and you have a question you want discussed, send it in.

G. M. WITHROW, Secretary.

### Kansas Meeting

Kansas will have a "Farm and Home Week" February 7 to 12, 1921. The beekeepers will meet and expect the presence of a number of leading men at the meeting. For particulars and program address Dr. J. H. Merrill, State Apiarist, at Manhattan.

### Domestic Beekeeper Sold

We are advised that Arthur Rattray has sold the Domestic Beekeeper to E. A. Little, of Lansing, Mich. This magazine was established by the late W. Z. Hutchinson, under the name of Beekeeper's Review. Since the death of its founder it has changed hands several times. E. B. Tyrrell published it for a time, then sold it to the National Beekeepers' Association. E. D. Townsend published it for several years after the National decided against the publication of an official organ. Townsend sold it to Rattray.

### Want Cuban Honey Excluded

The Manatee beekeepers, at their meeting at Sarasota, Fla., on October 28, passed a resolution favoring the exclusion of Cuban and West Indian honey, on account of danger of bee-disease infection.

Since foulbrood is now so generally scattered over the United States, we doubt whether it will be possible to secure such a quarantine as this.

### Von Ronzelen to Texas

A. G. Von Ronzelen, formerly of St. Louis, Mo., has removed to San Antonio, Texas. He contemplates going into the bee business in Texas, and will possibly establish a queen-rearing yard.

### Home From San Domingo

Henry Brenner, who has been for some years a large beekeeper in Porto Rico and San Domingo, and whose observations on West Indian apiculture have often appeared in the American Bee Journal, has returned to his old home in Seguin, Texas, where he intends to resume the business of honey production.

### Rich or Poor

When asked about the returns from bees, J. C. Davis, of Corydon, Iowa, said that judging from the best years one could soon get rich at the business, while judging from poor years, one would soon go bankrupt. On the average, the bees insure a good living and a little to lay aside, if properly cared for.

### Some Want a Tariff on Honey

The suggestion has been made that a committee of prominent beekeepers be appointed to take up the question of having an import duty levied on honey coming into this country. There is practically no honey being now exported, and the great quantity coming in from the Indies and Latin America has given impetus to this project.

### Aluminum Honey Comb Company

Mention has already been made in these pages of the fact that the Aluminum Honey Comb Company is bankrupt. The affairs of the company are now in the hands of a receiver. George F. Bush is receiver. Any beekeepers who have claims against this company which are unsettled, should write at once to the receiver and state the amount, as the assets of the company will be sold and divided among the creditors. Creditors should act promptly in order to protect their rights.

### Newell Edits Bee Department

The Florida Grower has an attractive bee department edited by Wilmon Newell. The Florida Grower is an interesting periodical, and no better man could have been found to conduct the bee department. More and more interest is being manifested in beekeeping by the various farm and poultry publications.

### Short Course at Columbia

A short course in beekeeping at the University of Columbia, Missouri, is announced for five days during Farmers Week. A more extended course is offered the two-year students at the college.

### A County Agent Gets Some Honey

L. F. Childers, County Agent at Fayette, Mo., secured about 100 pounds of surplus honey from each of his 25 colonies the past season, according to press reports. County Agents are highly busy fellows, but $800 from a few bees in the back yard is not a bad showing, even for a County Agent.

### Short Courses at Ames

Plans are now being developed for the beekeepers' short course, which will be held at Ames during the Farm and Home Week. The date for this annual meeting is January 3 to 8, 1921. Many beekeepers were disappointed last year when the Beekeepers' School was abandoned on account of the influenza epidemic. It will be their aim this year to have a program which will be of exceptional value to every person interested in beekeeping. We have already heard many express their intention to attend this short course. Make your plans now.

### New Course at Iowa College

A new course is to be offered this year by the Iowa State College, called the Course for Poultrymen, Beekeepers and Horticulturists. The course begins January 10 and closes March 23, 1921. This is a specialized course for those who may have had practical experience in their lines, but desire more definite information regarding their industry, and for those who are expecting to do work along these lines. The work is largely of a practical nature.

The course is of 12 weeks duration, divided into two six weeks periods. The work may be taken continuously or may be taken six weeks one year and completed in six weeks another year.

In addition to the special line, electives may be chosen from any non-collegiate subject offered by the college.

Upon completion of the course and one year of practical experience, a certificate will be granted.

A special booklet describing in detail the work of this course will be offered for distribution in the near future. A copy can be secured from the State Apiarist.

### Suggestions

H. Long, of Wooster, Ohio, suggests that for making large tops for summer or winter use, two-ply felt roofing with a coat of roof paint provides a light, dry and cheap roof. He also suggests bending down the tines of a four-tine table fork and filing them sharp to scrape off the heads of drone-brood when he has the hive open.

### Finding the Queenless Hive

W. H. Bacus, of Pleasant Hill, Ill., writes that in removing the comb-honey supers from five hives, he found one in which the old queen with some bees had remained. He caged the queen and took her to the house, but was at a loss to know in which hive she belonged. It looked like quite a task to examine the five colonies and locate the queens in four of them to determine where she should go. The next morning he took five cells from nursery cages and placed one at the entrance of each of the five hives. In the evening four of them had been destroyed and the fifth was carefuly guarded. He was thus able to tell where the queen belonged and to release her in her own colony.

### Bees Buy Bonds

Chris Jessen, of Eldridge, Iowa, bought $400 of Liberty Bonds and supplied the family table with honey from the product of seven hives in 1918. In 1919 his bees had increased to 13 colonies, and that year he bought $250 of bonds and supplied the table with their product. In 1920 his returns were very much smaller. There is a great seasonable variation in the returns from the bees, but for a series of ten years they pay as well or better than other lines of outdoor effort.

### Minnesota Bulletins

Two bulletins of interest to beekeepers are published by the State University of Minnesota. "Care of Bees in Spring," by Francis Jager, Chief of the Division of Bee Culture, is

Special Bulletin No. 38. "Queen Rearing," by G. C. Matthews, is Special Bulletin No. 49. Those interested can probably obtain copies by addressing the Division of Bee Culture, State University, St. Paul, Minn.

### British Columbia

I was sorry to hear that Dr. Miller had left us. He hoped for one form of immortality; he gained a sure one in the beekeeping world by his great service to beekeepers.

I signalized my tenth season as bee inspector by taking a trip to 55 degrees north latitude. Say, I saw for the first time in my life a real honey country. I can see that Bulkley and Nechacco Valleys at no distant date will beat Southern California in total production, and in average per hive. Fireweed abounds plentifully in the south of British Columbia, but it is everywhere along the Grand Trunk Railway—and it is different, oh, so different. Botanically, no; but in nectar and in general effect—vastly different.

F. DUNDAS TODD.

### Beekeepers' Congress in Trieste

The annual congress of Italian beekeepers met in Trieste, in the "now redeemed" Austrian Italy, September 6 to 9. A commemorative plate of bronze was donated by them to the City of Trieste with the following inscription:

"To the city faithful to Rome, returned to the fatherland, the 6th national congress of beekeepers, September 5, 1920."

Seven of the leading Italian beekeepers there joined in mailing a postal card to our editor, with their "cordial salutations."

### A New Organization

The Madison County Beekeepers' Association was organized October 1, 1920, at the court house in Edwardsville, Ill.

Mr. Alton L. Morgan, of Edwardsville, Chairman.

Mr. Earl Waggoner, of Alton, Secretary.

Mrs. F. J. Meyers, of Edwardsville, Treasurer.

Mr. A. L. Kildow, Chief Inspector of Apiaries, spoke on foulbrood; Mr. Albert Waggoner, of Edwardsville, on "Honey and Extracting," and Mr. Alton L. Logan on "Standard Hives and Fixtures."

The Association met again about November 15, to discuss the proper way to winter bees locally.

### Skunks

J. S. Beermaker, of San Diego, Cal., writes that he was troubled with skunks killing his bees. He placed some strychnine on bacon beside the hives and the skunks died within ten feet. He states that the crop in his locality was good the past season.

### Propolis for Incense

The possible use of propolis for incense in the Catholic churches is recalled by L'Abeille of Quebec, in the October number. A letter from Mgr. P. E. Roy, of Seleucie, states that it has all the odoriferous properties of incense and may be advantageously substituted for the latter, in ceremonies. All beekeepers know that propolis burns with a very sweet odor. So does beeswax, and that is probably why the Greek Catholic churches of Russia use no other luminaries.

### Water Paint

From Illinois, A. Motraz writes in answer to "Iowa's" enquiry, that several years ago he bought and applied water paint to about 200 hives and supers, but that it was unsatisfactory. On hives exposed to the weather, after a few rains it would rub off on his clothes.

## THE EDITOR'S ANSWERS

We answer as many questions as space will permit, in order received. When stamp is enclosed, the editor will answer by mail. We now receive more questions than we can answer in the Journal.

### Vinegar From Honey—Granulation

1. How do you make vinegar, from honey or from the washings?

2. Will white clover honey granulate in the comb very soon? It is in sections, not broken.

MISSOURI.

1. We give the method of making vinegar about twice a year, in the question department. Make your honey water heavy enough so it will float an egg. The egg should show only about the size of a dime above the surface. If it shows more, add some water; if it shows less, add some honey. Heat it so as to kill the undesirable ferments that may be in it. Then add some fruit juice, grape juice or fresh cider. It does not require very much. The liquid must be kept at a warm temperature, say about 75 to 80 degrees. It will do at 70 degrees, but will ferment more slowly. It first has an alcoholic fermentation, but it soon sours if you allow the air to get to it. When it is quite well fermented you can hasten the acetic fermentation by adding a little vinegar or vinegar-mother.

2. Comb honey rarely granulates, unless it is one of the thick grades, like heather. White honey doe not usually granulate in sealed cells, unless the bees sealed it before it was ripe. I remember peddling some clover honey, in the comb, in January. Some of it was broken in the trip and leaked down into the crate. I brought it back home and put it away in the honey house. Three days after, that leaking honey was granulated, although the other was still liquid.

You may keep it either in the crates, or even on shelves, just so you have it in a dry place away from too much cold, light or dust. It is not likely that you will have any trouble with granulation.

### Disease Killing Queens

We are sending under separate cover a sample of brood which is diseased and we have not been able to decide what it is. Could see no trace of it a month ago, but now, at the beginning of a honey flow, it has commenced to show. The workers have killed 12 queens out of 59 stands. This yard was moved about 30 miles about a month ago. Would that make any difference?

WYOMING.

Answer.—The small sample received contained a number of healthy pupæ which had evidently died in transportation. One bee had hatched and was alive still. There were 4 or 5 cells of deep-colored pollen and 3 dead larvæ which had evidently died of disease. But these were not similar to the larvæ that die of foulbrood, as they were not rotten, but rather dried up.

We are not experts, but from the knowledge we have of brood diseases, we would call the disease that killed those larvæ "sacbrood," for there were none of the appearances of real foulbrood.

However, I would recommend that you send sample of the diseased brood to Dr. E. F. Phillips, at the Bureau of Entomology, at Washington. They will send you bulletins that will help you in curing diseases of bees. Sacbrood is not infectious, and if we surmise rightly, it will probably diminish and finally disappear.

As to the bees killing their queens, there is something incongruous about this. Perhaps the bees have a touch of paralysis and the queens died of this. The moving ought not to be the cause of any trouble.

Since it is very difficult to pass on dead brood from so small a sample, after 5 days of travel, we urge you not to depend too much on this diagnosis, but investigate further.The folks at Washington have means which we do not possess of distinguishing diseases.

### Cost of Moving

1. Do you think it would pay to ship about 16 colonies of bees in car with other goods, to Michigan or Wisconsin?

2. About how much would it cost to ship carload of bees and other goods from Illinois to Michigan, or Wisconsin?

ILLINOIS.

Answers.—1. That depends upon what you can sell your bees for at your place and buy others at your new location. If the purchase price be as little or less than the selling price, then it would not pay to move them. Indeed, it might be better not to move them if you had to pay a little more for the new than you could sell the old for, because the risk and trouble of shipping is to be considered. Of course, I am supposing that the new are in every way as good as the old.

2. I've no sort of an idea. There might be a thousand different answers to the question, depending on the distance to different points. Your station agent ought to be able to tell you about it.

### Moths

What is the best way to store frames of comb from one season to the other without the beemoth getting them. We will have about 1,500 frames, as we will have to remove them from the bees.

LOUISIANA.

Answer.—In the Northern States, there is but little difficulty in preserving combs through the winter, as the cold destroys the eggs and larvæ. But in the Southern States, and especially as far south as Louisiana, it is necessary to use great care.

They should be stored in a moth-proof building. You can probably make a rough board house moth-proof by lining it on the inside with tarred paper. The windows and doors, if open, must have screens. To make sure of destroying the moths that are probably in the combs at the time of putting them away, the cheapest method is to burn enough brimstone in the room to kill the flies in it. If the supers containing the combs are scattered about the room, they will gain the full benefit of the brimstone. This material can usually be bought already prepared for burning, at any drug store. If you cannot find it already prepared, buy the rough brimstone or sulphur, melt it in a pot over a fire, out-of-doors, and dip pieces of rag into it. In this shape you can use more or less, as needed. Set it in a pan, on a stone, in the room; light it and leave the room, carefully closing all openings. Repeat the operation in two or three weeks, in case some eggs have hatched or in case the moths or grubs have not been all killed. Then keep the room well closed, especially at night, for the moth is a night bird. A quarter's worth of brimstone will kill all the moths you may have.

### Yield of Sweet Clover—Foundation—Candy, Etc.

1. I would like to know if anyone has an idea how much honey there is in an acre of sweet clover?
2. Can light section foundation be used in the brood-chamber?
3. If bees have plenty of honey and are kept in a very warm place in winter, what will happen?
4. How can one make candy for bees?
5. Which is the most economical in the production of comb honey, the pound or two-pound boxes? VERMONT.

Answers.—1. I do not remember ever to have seen any estimate, but it must be quite a yield.

2. Yes, if sufficiently reenforced.

3. Generally it will happen that they will be dead by spring, but in some cases they have been kept over. But there is no gain by it except the interest of watching them.

4. You will find particulars in the bee-books, the main thing being to boil the syrup till it will crack when dropped into cold water, but not to burn it.

5. The 2-pound, provided it can be sold for twice as much as the 1-pound.

### Scent to Draw Bees

Can you tell me about a scent to draw bees? I am hunting bees out of the woods. PENNSYLVANIA.

Answer.—The odor of burnt wax, especially old combs, is probably the best odor to draw bees from a distance. Of course the wind must be right. The combs should be burnt slowly, so as to make as much smoke as possible. However, if the bees are getting honey out of the fields at the time, nothing will draw them away from this source.

### Cross Combs

I have two swarms that were hived this spring, one in an 8-frame hive and one in a 10-frame hive. These bees have built their comb almost solid in their hive from frame to frame; no chance to take them out. They seem to have some disease; some dead bees in front of each hive early in the morning. Some will come out, try to fly and fall and act crazy till they die. Have seen some fill up on water, start to fly and fall and die in 5 or 10 minutes. INDIANA.

Answer.—You are not the only man who finds that his bees have built their combs criss-cross in the hive. The only way to avoid this trouble is to give your bees full sheets of foundation, well fastened in the frames. It is often better to use a few built combs, taken from other colonies, giving the colonies sheets of foundation to work, as a natural swarm, if hived on foundation, may pull the sheets down even when wired.

The only way to get your bees onto straight combs is to transfer those combs into other frames, during apple bloom, in spring. That is the best time, as the combs are then light.

It is difficult to tell, from your description, what ails your bees. If only a few drag themselves about in front of the hive, they may simply be old, worn-out bees. If a large number this fall, it may be paralysis, though this does not usually happen in the fall, in Indiana. If the population of each hive is still very strong, there probably but little danger of anything serious and no cause for worry.

### What Size of Hive?

I am soon to increase my apiary and I cannot decide on a hive—Langstroth or Dadant. I expect to raise comb and extracted honey, but would like to have only one kind of hive. The Dadant is too large for comb honey and the Langstroth does not prevent swarming, or produce extracted honey as well as the Dadant. Can I use the Dadant hive all around and on comb honey take out about 3 frames and put in place a division board? KANSAS.

Answer.—Nothing is more annoying than to have two different sizes of hives in an apiary. We know that by experience. For that reason we never advise anyone to change from one style to another. Good use can be made of the Langstroth hive by using a greater number of stories. But the deeper frame has proven better in a number of ways, and especially for wintering. So if you have only a limited number of hives and want to increase largely, you might use your Langstroth hives and frames for supers or for comb-honey production. Of course, the reduction of the number of frames in the Dadant hive will have as a result the forcing of the bees more readily in the supers. But this gives similar results to those of small hives. Each man must decide for himself what is best in his case.

### Swarms or Nuclei

I lost two swarms this spring. I laid it to the cold weather in the month of May. I shall start again in the spring. Whether to buy full swarms, or just nuclei, is the question. WASHINGTON

Answer.—The answer to this question depends upon the occasions that you may have. Full swarms are much better than nuclei, if they are secured at the right time. But you may be able to buy nuclei early enough to make good colonies out of them.

### Wintering

I should like to know your opinion on wintering a small colony of bees; would you think it advisable to put them on top of a strong colony with a screen between the two? NEW YORK.

Answer.—It might do in the cellar. It does not impress us as practical for out doors

### Moving Hive—Climbing Milkweed

1. During the swarming season, if a colony is ready to swarm and is moved directly back 7 or 8 feet, on a new stand, and a new hive is placed on the old stand exactly like the old hive, and a new queen put into new hive, and old hive made to look entirely different, would field bees go to new hive and queen?
2. Can you furnish seed of climbing milkweed; if not, can you tell me where it can be obtained? IOWA.

Answers.—1. Yes, the field bees will go to that spot, for that is the only spot they know for their home. The only objections to this method are: 1st, there will be no young bees in that new hive to build comb and help take care of the brood and *that* is their work. A quart or two of young bees ought to be given the new colony. 2nd, the hive which is removed will have no old bees at all and may need food if the season is backward or cold. Yet much increase is made in just about this manner, with good success, usually.

2. We do not believe it is advisable to introduce it in your vicinity, for it appears to be an undesirable pest in the fields.

### Bees Diseased

My bees have had an ailment similar to Nosema apis. I sent samples to the Government Bureau, but they could find nothing wrong. Lost about 25 colonies last year. There is a preserving and jelly factory near me which dumps broken jars and cans of raspberry extracts and apple butter, etc near my yard in a hollow. I've seen my bees amongst this stuff. Could that be the cause of their trouble? They run from their hives and flutter their wings as if they had paralysis almost all year around. MISSOURI.

Answer.—It is possible, but not probable, that the jelly factory has anything to do with the disease of your bees. However, if the disease continues all the year round it would be an indication in that direction. There are evidently several diseases of the adult bees which have not yet been very well diagnosed. We believe that Isle-of-Wight disease is due mainly to the damp climate of the British Isles. In this country, constipation, caused by inferior food in winter, has probably been the cause of some deaths in spring of a disease similar in appearance to that caused by the Nosema. It will be advisable for you to note whether there are times when the disease disappears and whether those coincide with a stopping of the dumping of the refuse in the ditch in question. We would welcome further information on the subject.

### Putting Queen Above—Mating

1. In the spring, I am thinking of putting a hive-body above my old one, with a super and excluding-board between. Could I take a couple of frames of brood, with the old queen, out of the lower story and put them in the upper story with frames full of foundation, and, if so, would they rear a new queen below?
2. Should I leave an entrance in the upper body-hive, or close it up and have just the lower entrance?
3. Would you advise me to put some supers between the two bodies, or one between and one above?
4. Why cannot a queen mate in her own hive? NEW HAMPSHIRE.

Answers.—1. Yes. They usually rear queen-cells under those circumstances.

2. It is not necessary with queen above.

3. It will really be better to put supers between the two bodies if you expect the bees to retain two queens for any length of time in the same hive. The tendency is for the bees to kill one of those queens, even when there is a queen excluder between them.

4. A queen cannot mate in her own hive, because nature has provided that the sexual organs of the drones require the exercise of flight in order to exude from the abdomen. Mating is impossible except in flight. A queen surrounded with thousands of drones will not mate except on the wing.

### Drone-Brood

Off and on, in my comb honey, I find sections having drone-brood; otherwise of the best grade. It has been my way to cut this out and put the sections back, hoping that the bees would fill them; this rarely is done; the bees preferring to finish up the under edges of such sections and letting them go. The other day it occurred to me that it might be better not to cut out such brood, letting that brood develop and the drone emerge; the cells then being empty, the bees might fill them out with honey. What do you think of this? PENNSYLVANIA.

Answer.—The reason why the bees did not fill them after cutting out the drone-brood was, probably, because they were nearing the end of the crop and had room in other parts. Allowing the drones to hatch, the bees would probably fill those sections with honey. But they would be darkened with the cocoons of the drone-brood and would be of less value for sale. If this happens much in your hives, better use a queen excluder.

### Indiana Convention

The Indiana Beekeepers' Association will hold their annual convention at the State House in Indianapolis on Thursday and Friday, December 9 and 10. A good attendance is expected.

### Former King a Beekeeper

Former King Manuel of Portugal keeps bees at present at Fulwell Park, somewhere near Richmond, England; the British Bee Journal giving a picture of his apiary. But it appears he has a "Master of the King's Bees," so he is not much of a beekeeper, after all.

### Washington Joint Meeting

On December 14, 15 and 16, in Spokane, will be held the joint meeting of the Washington State Beekeepers and the Inland Empire Associations, at the same time as the State Horticultural Association, in the famous Davenport Hotel.

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## CLASSIFIED DEPARTMENT.

Advertisements in this department will be inserted for 5 cents per word, with no discounts. No classified advertisements accepted for less than 35 cents. Count each initial or number as one word.

Copy for this department must reach us not later than the 20th of the month preceding date of issue. If intended for classified department it should be so stated when advertisement is sent.

### BEES AND QUEENS

SEE ATWATER'S NEW CLASSIFIED HONEY ADVT.

WE are now booking orders for early spring delivery of two and three-frame nuclei, with untested or tested queens. Write for prices and terms. We also manufacture cypress hives and frames.
Sarasota Bee Co., Sarasota, Fla.

PACKAGE BEES—Same old prices if you send cash with order before January 1.
E. A. Harris, Albany, Ala.

FOR SPRING DELIVERY—One good Italian queen, 1 Hoffman standard frame emerging brood, 1 pound live bees, price complete $6.50, f. o. b. Bordelonville. Queen introduced, mated, laying enroute; loss in transit replaced if noted on express tag by agent; no disease in State. References given. Orders booked, May delivery, one-fifth cash; orders filled in rotation. Jess Dalton, Bordelonville, La.

NUCLEI for 1921—We beg to advise those who intend to purchase nuclei to enter their orders early in order to be certain of being able to obtain them, as the demand greatly exceeded the supply during the past season, and the majority of late orders went unfilled. We are now booking orders for three-frame nuclei of Italian bees, with Italian queen, at $6.50 Hybrid bees, with guaranteed pure Italian queen, at $5.50. Terms, one-third down with order. No disease, safe arrival and satisfaction guaranteed. A. R Irish,
Doctortown, Georgia.

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EDSON APIARIES now booking orders for queen bees for delivery during season of 1921. Prices: One untested queen, $1.25; 50 untested queens, $57.50; 100 untested queens, $100. Orders filled in rotation; first shipments March 1, 1921.
Edson Apiaries, Gridley, Calif.

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ORDERS BOOKED NOW for 1921 shipments of bees and queens. Send for descriptive circular and price list.
R. V. Stearns, Brady, Texas.

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BEES BY THE POUND—Pure Italians. 1, 2 or 3-pound packages, with or without queen. We have 1,000 colonies located in the best Kale district of California. Shipping dates from March 20 to July 1. Write for prices. Twenty years a breeder.
Garden City Apiaries, San Jose, Calif.

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HIGH GRADE ITALIAN QUEENS—Send for catalog.
Jay Smith, R. 3, Vincennes, Ind.

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FOR SALE—Fifty colonies of bees in standard 8 and 10-frame hives. Write for prices.
James Johnson, Pocahontas, Ark.

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DAY-OLD QUEENS—Superior improved Italians, mailed in safety introducing cages. Safe arrival and satisfaction guaranteed anywhere in the U S. and Canada. Send for circular. Order in advance. Prices, April to October, 1, 75c; 12, $7.20; 100, $60.
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A. J. Pinard, Morgan Hill, Calif.

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PURE ITALIAN QUEENS—Golden or leather colored, packages and nuclei; 1 untested queen, $1.60; 6, $7.50; 12, $13.50; 50, $55; 100, $100; virgins, 60c each; packages, 24 and under, $2.25 per pound; 25 and over, $2 per pound; nuclei, 1-frame, $4; 2-frame, $6; 3-frame, $7.50; queens extra. One-story 10-frame colony with queen, $12.
Golden Star Apiaries,
R. 3, Box 166, Chico, Calif.

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BEES AND QUEENS from my New Jersey apiary. J. H. M. Cook,
1Atf 84 Cortland St., New York City.

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PACKAGE BEES AND PURE ITALIAN QUEENS—Booking orders now for spring delivery. Circular free. J. E. Wing,
166 Schiele Ave., San Jose, Calif.

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FOR SALE—Three-banded Italian queens; untested, $1.25 each; 6, $6.50; 12, $12. Select untested, $1.50 each. Satisfaction guaranteed.
W. T. Perdue & Sons,
R. No. 1, Fort Deposit, Ala.

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Buckeye Bee Co., Box 443, Massillon, Ohio.

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Clover Leaf Apiaries, Wahoo, Neb.

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1920 PRICES for "She Suits Me" queens. Untested Italian queen, from May 15 to June 15, $1.50 each. After June 15, $1.30 each; $12.60 for ten; $1.10 each for 25 or more.
Allen Latham, Norwichtown, Conn.

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FOR SALE—After April 15, our golden Italian queens, untested, one $1.60 or $15 per doz.; select untested, one, $1.75 or $18 per doz.; tested, $3 each. Safe arrival guaranteed.
Tillery Bros.,
R. 5, Georgiana, Ala.

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"QUALITY" THREE-BANDED ITALIANS from excellent stock; untested queens, 1, $1.50; 6 for $7.50; 12 for $13.50; 50 for $55; 100 for $100. N. J. James,
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Nueces County Apiaries, Calallen, Texas,
E B Ault, Prop.

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FOR SALE—Sweet clover extracted honey in 60-lb. cans First premium at county and state fairs. Harry McCombs, Sterling Colo.

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HONEY—Supply your customers, finest alfalfa clover honey, extra strong cases, any quantity, $24 case of two 5-gal. cans. There are more cases at 19 cents per pound. All f. o. b. here. Write for prices on large lots. Cash with order Reference, First National Bank here. Sample 20c
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Nevada Honey Co., Yerington, Nev.

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Wayne Co., Newark, N. Y.

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FOR SALE—Extracted honey, mostly white clover and basswood blend. 28 60-lb cans, two in a box, at 20c per lb.; 150 10-lb. pails, six in a box, at 22c per lb.; 500 lbs. comb honey. Sample of extracted honey, and prices on comb honey on request.
J. W. Bittenbender, Knoxville, Iowa.

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WANTED—Comb and extracted honey.
The L. H. Snider Apiaries, Auburn, Ind.

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WHITE CLOVER HONEY in 10-lb. pails, 6 pails to case, 25c pound.
W. L. Ritter, Genoa, Ill.

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P. Outzen, White Bear Lake, Minn.

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FOR SALE—500 pounds of Dadant's light brood foundation, put up in boxes holding 50 pounds. Price 75 cents per pound in 50-pound lots; will not sell less than one box. This foundation is in fine shape, as it was left over from this spring.
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FOR SALE—We have a good stock of 5 and 10-lb. pails and can make prompt delivery. Crate of 100 10-lb. at $17; crate of 200 5-lb. at $22.50. All orders received this month discounted 5 per cent off these prices
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FOR SALE To reduce stock, crates of 96 1 gallon cans, with bails and 3-inch screw caps, at $17.50 per crate, f. o. b. Grand Rapids.
A. G. Woodman Co., Grand Rapids, Mich.

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FOR SALE—One-pound jars in two doz. cases, ten cases or more at $1.75 per case, f. o. b. factory.
A. G. Woodman Co., Grand Rapids, Mich

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FOR SALE—Good second-hand double-deck comb honey shipping cases for 4¼x4¼x1⅞ sections, 25 cents per case, f. o. b. Cincinnati; terms cash with order.
C. H. W Weber & Co.,
2146 Central Ave., Cincinnati, O.

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FOR SALE—Good second-hand empty 60-lb. honey cans, two cans to the case, at 60c per case, f. o. b. Cincinnati. Terms cash with order. C. H W Weber & Co.,
2146 Central Ave., Cincinnati, O.

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SEND us a list of goods wanted and will quote you lowest prices. We are the money-saving house. Price list free. Try us.
H. S. Duby & Son, St. Anne, Ill.

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SEE ATWATER'S NEW CLASSIFIED HONEY ADVT.

---

WANTED—To correspond with parties having bees in 10-frame standard hives that will lease them on shares. Will give good contract and have a good southwest Iowa location.
W. A. Jenkins,
144 Simmons St., Galesburg, Ill.

WANTED—Bees, with or without location.
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1717 Blake Boulevard, Cedar Rapids, Ia.

WANTED—To buy bees in Georgia, Florida, Alabama and the Carolinas. State price, style, hives, etc
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WANTED—Several bee outfits, preferably near home.
H. G. Quirin, Bellevue, Ohio.

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WANTED—To trade, Marlin repeating shotgun for typewriter.
H. N. Boley, Hillsboro, Iowa.

WANTED—Beeswax, old combs and cappings for rendering on shares Also wax accepted for trade. Top market prices offered.
A. I. Root Co., Council Bluffs, Iowa.

WANTED—White extracted honey of fine quality. Write us what you have, and price.
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The Colorado Honey Producers' Association,
Denver, Colo.

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1131 3rd St., Milwaukee, Wis.

HONEY WANTED in car load lots or less. Send samples and price.
Chris Bahr, Catbay, N. D.

WANTED Your order for "Superior" Foundation. Prompt shipments at right prices.
Superior Honey Co., Ogden, Utah.

WANTED—Your old combs, cappings and slumgum to render into beeswax. We get enough more wax with our well equipped presses to pay for our work.
Dadant & Sons, Hamilton, Ill.

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FOR EXCHANGE—Practically new library of Original Sources, 10 massive volumes in sheep; Encyclopedia. Value about $75. Want small foot-power saw machine, Marlin or Winchester rifle, incubators or bee hives.
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SELL YOUR WARES with sign-boards, the silent salesmen. Place now to sell next year's crop with them. Signs made to order. Prices reasonable. Satisfaction guaranteed. Investigate. H. A. Schaefer, Osseo, Wis.

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FOR SALE—"Superior" Foundation (Weed process). Quality and service unexcelled.
Superior Honey Co., Ogden, Utah.

FOR SALE—Cedar or pine dovetailed hives; also full line of supplies, including Dadant's foundation. Write for catalog.
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FOR SALE—Barnes combined footpower saw.
R. E. Hammond, Bethune, S. C.

FOR SALE—150 colonies Italians, 11 frames, extra supplies for 100 or more. Complete power extracting outfit. Rio Grande valley, 12 miles from El Paso, $2,000. Also 20-acre farm, including fine 6-room home with other buildings. Sell together or separate. For particulars write. F. C. Belt,
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**IF YOU WANT THE CHEAPEST, BUY THE BEST**

I am prepared to furnish for the season of 1921 twenty-five hundred two and three nuclei of my bright 3-banded Italian bees, headed with young, vigorous queens. These bees are free from disease and safe arrival guaranteed. Hoffman frames wired and on full sheets of foundation; very few combs over two year sold. I am booking orders now, with first payment to be made February 1, 1921, unless purchaser wishes to make a payment with order.

Two-frame, $5.25; three-frame, $6.25. If queens are wanted add $1.25 each.

**A. B. MARCHANT, Jesup, Ga.**

Reference: Merchants and Farmers Bank of Jesup.

## "Falcon" Helps Swell the Nation's Honey Crop

The last honey crop of the United States is estimated at 250,000,000 pounds, which at the present high prices means a value of fully $50,000,000.00.—(News item.)

**"Falcon"** bees and bee supplies played an important part in the attainment of these figures.

"Falcon" reputation for quality is nation wide and universal. Exacting bee-men depend upon "Falcon" for the success of their honey crops.

We urge you to place orders now for early spring delivery.

We have an excellent dealer's proposition for beekeepers who wish to handle "Falcon" supplies. Write -

**FALCONER MFG. CONCERN, Falconer (Near Jamestown) N. Y., U. S. A.**

*"Where the best Beehives come from"*

## TIN CANS AND GLASS JARS

We have been fortunate enough to secure a fresh supply of all kinds of tin cans and glass jars for our customers.

The cases for two five-gallon cans are of the best. Made of three-eighths inch lumber, with seven-eighths inch heads, and the heads of the boxes are cleated to make the very strongest package possible. We recommend them as being the very best on the market.

Friction top cans in any kind of case you may require, 2½-lb., 5-lb., 10-lb., in cases of 6, 12, 24, 50 and 100.

We handle 6-ounce jelly glasses, 2 dozen to the case.

We also call your special attention to our 16-ounce screw-cap jars. A tall package that is a favorite with everyone who has used or seen it. These are packed 2 dozen in a case. We can recommend them most highly.

Write today for our prices on all these cans and jars. They will interest you.

Be sure to ask, also, for our honey label catalog.

**DADANT & SONS, Hamilton, Ill.**

## Printing

**Honey Labels**
**Stationery**
**Cards, Tags,**
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**Everything for the Beekeeper**

**Order Early and get Prompt Service**

New labels, new equipment, more help. We are better equipped than ever to supply all kinds of printing for the beekeeper

**American Bee Journal**

**HAMILTON, ILL.**

**ATTENTION, PACIFIC NORTHWEST BEEKEEPERS!**

We handle a full line of supplies for beekeepers, including **Italian Queens.** Write us your requirements and for our Catalog A. It's **free.**

SPOKANE SEED CO.,
906 First Ave. Spokane, Wash.

**BEST GOLDEN ITALIANS**

**BEN G. DAVIS, SPRING HILL TENN.**

A NEW BEE BOOK
"Dadant's System of Beekeeping"
Price $1.00.

# QUEENS

In announcing our policy for 1921, we feel that the few changes we make will be to the mutual advantage of our customers and ourselves. The demand for our queens has become such that we will discontinue the sale of bees in packages, and will devote all our time and attention to rearing and developing our strain of Italians that have proved so satisfactory to our customers in the past. We will sell but **One Grade of Queens,** and that **the very best** that we are capable of producing. Our original stock was procured from Mr. Doolittle, and by constantly breeding for desirable qualities, and by rearing all queens under the most favorable conditions, queens of high standard are the result.

**We are Now Booking Orders** for 1921 delivery, and those wishing to get queens at any specific date should place orders early, as we fill orders in rotation. Our shipping season is from May 15 to October 15.

**Every Queen** is reared by me personally, and by me inspected before I put her into the mailing cage. Safe arrival, pure mating and satisfaction is our guarantee. We are specializing on **Breeding Stock.** We do not sell package bees, nuclei or virgin queens.

**Prices for 1921**

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| 1 to 4, inclusive | $3.00 each |
| 5 to 9, inclusive | 2.90 each |
| 10 or more | 2.80 each |
| Breeding Queens | 12.00 each |

**WRITE FOR OUR 1921 CATALOG**

**JAY SMITH**
**Route 3 VINCENNES, IND.**

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# Honey Blending *in* *Glass Lined Steel Tanks*

Every honey dealer recognizes the advantage of producing uniformly colored honey.

Elyria Glass Lined Steel Tanks are equipped with the Nielson Propeller agitator. It operates on the principal of the ships propeller, requires little power, affords quick and complete agitation and perfect blending is assured. During agitation the honey is kept at the required temperature by circulating hot water in the tank jacket.

Stout steel tanks, lined with hard smooth glass enamel, are durable, sanitary and easily cleaned.

Elyria Honey Melting **Ovens complete the melting process in four or five hours, and every can is saved**

Write to our nearest branch office for detailed information

**THE ELYRIA ENAMELED PRODUCTS COMPANY, Elyria, OHIO**

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SEEDS
GARDEN & FIELD SEEDS
C.H.W. WEBER & CO.
HONEY
BEEKEEPERS SUPPLIES
HONEY
BEES WAX

We will be in our new home January 1, 1921 and will be able to take care of all our good customers better than ever before. If in the city please call and visit us.

**C. H. W. WEBER CO.**
**CINCINNATI, OHIO**
**2163-65-67 CENTRAL AVE.**

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(APIARY DEPT.)

**MANUFACTURERS OF**

## Beekeepers' Supplies

**CHICO, CAL., U. S. A.**

Dadant's incomparable Foundation is always kept in stock. Western Beekeepers can be supplied advantegeously.

BEEKEEPERS, wherever they may be located, before deciding where to obtain supplies, should write to The Diamond Match Co. for prices, and for their Beekeepers' Supply Catalogue.

This Company are the largest manufacturers in the world who make Bee Supplies. They own their own timber lands, mills and factories, and supply goods direct from the tree to the beekeeper.

Full advantage of this low cost of production is given to the purchaser.

The Apiary Department (which is in charge of experienced supply men, who are also practical beekeepers) maintains a constant excellence of product and offers unsurpassed service.

**The Diamond Match Co.**
**Aplary Department** **CHICO, CAL., U. S. A.**

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## Quality Bee Supplies

**FROM A**

**RELIABLE HOUSE**

**Without fear or favor I place my BEE WARE and SERVICE before you**

It is the small annoyances that often grow into disastrous results. Avoid the so-called "little losses" by using MONDENG'S GOODS.

Quality is first—save time when you put your goods together by getting supplies that are accurately made. Service is next—no delays when bee supplies are ordered from my factory.

I am ready to meet your urgent needs. Send for my latest price list.

**CHAS. MONDENG**
146 Newton Ave. N. and 159 Cedar Lake Rd. Minneappolis, Minn.

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## ELECTRIC IMBEDDER

**Price without Batteries $1.50**
Not postpaid.

Actually cements wires in the foundation. Will work with dry cells or with city current in connection with transformer. Best device of its kind on the market.

**For sale by all bee supply dealers**

**Dadant & Sons,** Manufacturers HAMILTON, ILL.

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PAT JULY 30, 1918

## C. O. BRUNO NAILING DEVICE

*Made for the Huffman Brood Frames.* A combined Nailing, Wiring and Wedge Clamping Device. Has been tried and is guaranteed to do accurate work.

PRICE $7.50

Complete directions for operating are furnished with each device.

Manufactured by C. O. BRUNO
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Thirty years' experience in making everything for the beekeeper. A large factory specially equipped for the purpose ensures goods of highest quality. Write for our illustrated catalog today.

**LEAHY MFG. CO., 90 Sixth St., Higginsville, Mo.**
**or J. W. ROUSE, Mexico, Mo.**

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**BEEKEEPERS**

We manufacture millions of **sections** every year that are as good as the best. The **cheapest** for the **quality; best** for the price. If you buy them once, you will buy again.

We also manufacture **hives, brood-frames, section holders** and **shipping cases.**

Our Catalog is free for the asking

**MARSHFIELD MFG. CO., Marshfield, Wis.**

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Place your order for supplies NOW and take advantage of the Early Order Cash Discount, 5 per cent for December, 4 per cent for January. Our stock of Standard Hives, Supers, Hive Bodies, Brood Frames, Foundation and all other Standard Goods is complete. "If you want the Cheapest, buy the Best."

Our aim is to give prompt service, highest quality and Guaranteed satisfaction to our customers. Send us a trial order. We feel confident you will be satisfied.

Our annual catalog will be ready for mailing January, 1921. It's free for the asking.

**AUGUST LOTZ COMPANY, Boyd, Wisconsin**

**BEE SUPPLIES**

We are prepared to give you value for your money. Our factory is well equipped with the best machinery to manufacture the very A-best supplies that money can buy. Only the choicest material suitable for bee hives is used. Our workmanship is the very best. Get our prices and save money.

**Eggers Bee Supply Mfg. Co.**
Incorporated
ROUTE 1, EAU CLAIRE, WIS.

FOR YOUR WINTER TRADE

**HONEY** WHOLESALE PRICES ONLY

**EXTRACTED HONEY**
IN SIXTY POUND CANS

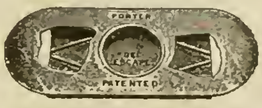
2-60 POUND CANS
**$22.20**
F. O. B., BOULDER, COL.

NOTE:—This Honey will be granulated, finest quality white alfalfa—sweet clover honey, this years production

If cash does not accompany order satisfactory references must be given. All orders subject to our approval.

THE **FOSTER HONEY** & Merc Co.
BOULDER, COL.
(MENTION THIS ADVERTISEMENT)

**PORTER** BEE ESCAPE SAVES HONEY TIME MONEY



For sale by all dealers.
If no dealer, write factory
R. & E. C. PORTER, MFRS.
Lewistown, Illinois, U. S. A.
(Please mention Am. Bee Journal when writing)

**HONEY FOR SALE**

We have New York State light honey, 2 60-lb. cans in a case. Price on application.

**I. J. STRINGHAM, Glen Cove, N. Y.**
NASSAU, CO.

**WESTERN BEEKEEPERS!**

We handle the finest line of bee supplies. Send for our 68-page catalog. Our prices will interest you.

**The Colorado Honey Producers' Association, 1424 Market St., Denver, Colo.**

**BEE SUPPLIES**

We carry a complete stock of supplies at all times, and can make prompt shipments. Our prices will interest you.

Send Us Your Inquiries
**A. H. RUSCH & SON CO.**
Reedsville, Wis.

# DADANT SYSTEM OF BEEKEEPING

BY C. P. DADANT

In this little book the author gives a pleasing account of his experience in honey production for more than half a century. He describes the many experiments conducted by Charles Dadant and his descendants in the Dadant apiaries.

The Dadants have been engaged in the production of extracted honey on a commercial scale for many years. More than 60 tons of honey have been produced in their apiaries in a single year by the Dadant system of beekeeping.

This book is worth several times its price to any beekeeper with a dozen colonies. The Dadant system shows how to keep more bees and get more honey with less labor.

Full information about the use of the large hive. 118 pages. Attractive cloth binding.

**PRICE $1.00**

**AMERICAN BEE JOURNAL, HAMILTON, ILL.**

**We have obtained a large amount of 1 pound glass jars that we can offer at $6.85 per gross, F. O. B., Newark, N. Y.**

**Friction Top Pails all ready for delivery at Newark, New York**

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| 2½ pound cans, f. o. b. | $ 6.50 | per hundred |
| 3 pound cans, f. o. b. | 7.00 | per hundred |
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The above prices are f. o. b. Newark, of $1 per hundred less f. o. b. Baltimore, Md.

**Now is a fine time to gather up your old combs and ship them in for rendering. Write for our terms and shipping tags. Highest cash prices paid for beeswax, or we will change your wax for foundation.**

We have in reserve a complete line of bee supplies which we can quote you attractive prices on. We also have some special offers to make on 8-frame hives, bottom-boards and covers.

Send in your list of requirements and let us quote you on same.

**Address THE DEROY TAYLOR CO., Newark (Wayne Co.), N. Y.**

**FRICTION TOP PAILS---GLASS HONEY CONTAINERS**

2½ pound pails in 2 doz. shipping crates.
2½ pound pails, 200 per crate.
5 pound pails, 100 per crate.
10 pound pails, 100 per crate.

18 oz. screw cap glass honey containers, 1 doz. per case—fibre shipping cases.
We also carry a full line of Lewis supplies. Send list of your needs, or requests for catalog, to

**DEPARTMENT B**

**WESTERN HONEY PRODUCERS, SIOUX CITY, IOWA**

# Crop and Market Report

**Compiled by M. G. Dadant**

For our December market page we asked the following questions of correspondents: 1. What portion of the honey crop is still in the hands of the beekeepers in your neighborhood? 2. How is the demand? 3. At what price is it selling, wholesale and retail? 4. Will your market take more honey at present prices than is produced locally? 5. What do you think is a fair wholesale price under present conditions? 6. What is the condition of the bees as they go into winter quarters? Of the honey plants? How do you regard the prospect for next year?

## PORTION OF CROP IN HANDS OF BEEKEEPERS

There is practically an entire agreement on the part of reports coming in that the smaller beekeepers who sell in a retail way have almost entirely gotten rid of their present supply of honey. If it is not already disposed of, they expect to clean up pretty well by the holidays.

On the other hand, the larger producers who are forced to seek the wholesale markets, have a very large part of the crop still on hand. The Eastern States report from 25 to 50 per cent on hand, whereas the inter-mountain States have possibly a little more than this.

The situation seems to have improved considerably in California, and they report now a large proportion of the crop sold.

Throughout the country the demand on the part of wholesalers is very low, indeed, whereas the retail demand is good. Naturally, owing to the unsettled condition, the wholesalers are only buying from hand to mouth, and not getting in their season's supply of honey in the fall as is usually the case. For this reason the orders from bottlers and jobbers are at a minimum and they are therefore not in the market for so much honey as usual.

This would seem to indicate that the demand should pick up from now on, owing to the fact that the wholesalers will run out of honey and will necessarily have to call upon the jobbers and big packers for a fresh supply.

Prices at which honey is selling in a retail way have held up remarkably well, and we have only one or two reports where ten-pound cans are retailing at 25c per pound. In most instances the price is 30c to 35c, and this is universal throughout the whole country.

With the smaller beekeepers the stock of honey they produced themselves will not begin to supply their own trade generally, whereas the larger beekeepers claim they will have difficulty in disposing of the crop. This means, therefore, that the demand on the part of the wholesalers and jobbers will have to increase if the larger producers are to dispose of their crop at normal figures.

## FAIR WHOLESALE PRICE

Indications of what the fair wholesale price should be vary greatly with different sections of the country. There seems to be no tendency, however, to a great slashing of prices, and throughout the East indications are that beekeepers think a fair price would be from 17c to 20c for white extracted honey, with a price of from $7 to $9 for comb honey. In the west there is an indication that producers are willing to sacrifice prices in order to move their crop. In some instances producers who formerly stated they were holding for 20c are now willing to take 15c to 18c for their crop if they can move the same immediately. The very lowest price we have had any indications of is in Arizona, where one car of dark amber honey sold for 11c, and the reporter stated he had another car which he is willing to sell for 10c. Utah white extracted is offered at from 14c to 16c per pound. There is a tendency on the part of producers in the West to want to dispose of their crop, and a buyer who could offer cash for immediate shipment could probably get some reduction in prices.

This slashing of prices, in the few instances, however, seems to be on the part of beekeepers who are outside of the different large associations who are handling the crop for their members. For instance, the California Association quotes all honey within the exchange as moving nicely, and at very fair prices. Honey outside of the exchange is from 3c to 5c per pound lower than what is being demanded by the exchange.

This, of course, has a very depressing influence upon the market, as buyers are not going to pay the Association a higher price as long as the lower priced honey is available outside.

The Texas Association has, of their own accord and by agreement, reduced their former prices from 3c to 4c per pound, so that their lowest grade amber honey is selling at about 14c per pound f. o. b. shipping point. However, there is very little honey left in the hands of producers there and the Association expects to be able to clean up the whole Texas crop without difficulty.

Another thing which has tended to hold the prices down is the influx of large quantities of West Indian and foreign honeys into the New York market. West Indian honey is selling from 80c to $1.25 per gallon, or a price of less than 10c per pound, in many cases.

Of course, most of this is inferior honey, which would not grade up with any of our domestic products, but it will compete with it in many lines, such as in use for bakeries' products, etc.

As stated above, there is a tendency on the part of producers to willingly take a little less price than they had wanted per previous report to us. There seems no indication, however, of a large break in the market, and the lowest price at which white alfalfa honey is quoted is 14c f. o. b. shipping point.

Within the last two weeks there has been a stiffening of the market, and some reports are now coming in that there should be no difficulty in disposing of the complete 1920 crop before the new crop is available.

One point which made the producers so anxious to sell is the fact that in the last two or three years there has been such an extreme demand for honey that the whole crop has been sold previous to the holidays. This was not formerly the case before war times and we see no reason why beekeepers should demand all honey sold before the first of the year. This year conditions are abnormal and the demand will probably strengthen as the season continues, owing to the fact that the wholesalers only have very limited supplies on hand and must renew them as fast as they sell any to the retailers and other trade.

There seems to be no doubt in the minds of many that honey prices are to see a reduction before the 1921 crop is sold, and in fact there is now a reduction over what was formerly asked. The California Association is still holding to their original prices, and we have had no reports of any reduction on the part of any of the other large western associations.

From all indications, white honey is going to sell for awhile yet, at least, at a price equal to 15c per pound f. o. b. shipping point, while amber honey should command a price of 1c or 2c a pound less. In fact prices at which honey is retailing and with good demand in the eastern and central western market would not indicate that white honey should have to sell as low as 15c per pound.

As stated before, it is not a lack of demand on the part of the retailers and of the consuming public for honey, but more on the part of the wholesaler, who is very conservative in his buying, that has kept down the demand for large lots of honey.

We just have report of the movement of 200 tons of California honey to New York. This would indicate that the demand has increased, although we have no idea of what price was received for this shipment.

Just what the honey market will do within the next sixty days remains to be seen, and will depend entirely upon the demand of the consuming public, for the wholesalers cannot all hold out with their orders if the public demands honey.

## ANOTHER CHRISTMAS AND ANOTHER NEW YEAR

Haven't all of us connected in any way with beekeeping in America much to be grateful for at this Christmas time, and much to hope for from the New Year?

Just to suggest Europe and the hard and terrible conditions over there, involving the beekeepers as much as any other class, makes us glad indeed that we are here and not there—here where there is law and order and peace and plenty.

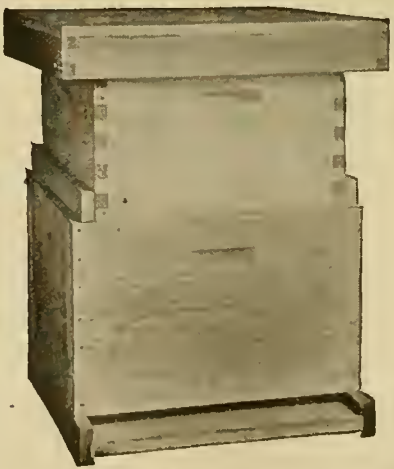
In these days of readjustment in this country, when we are getting back to normal, getting back to times when a dollar will again be a dollar, the beekeeper, with his honey, is better off generally than the farmer with his wheat and wool and fruit—and where he can secure or make a local market for his product he is far better off than the general farmer.

Looking forward to the New Year: It will continue to be a time of readjustment, but not of so violent readjustment as is now going on. Honey will be in the new year better and more widely advertised to American consumers than ever before. It has fair promise to be more extensively used than ever before, and the beekeeper can hope with us that the abnormal and monstrously high prices charged today for the iron and steel and tin and for the white pine and the basswood that go into his supplies, will have to drop, so that his supplies may be made cheaper and the prices reduced just as fast as costs will permit. We hope for this as much as any beekeeper can.

Then, recalling our beekeeping blessings here and now in America, and hoping for a prosperous season in 1921, let us wish each other a Merry Christmas and Happy New Year, and face the future with good courage and good sense.

**THE A. I. ROOT COMPANY, West Side Station, Medina, O.**

## MODIFIED DADANT HIVE



Glance at this illustration to compare this hive with "Standard" Langstroth hive.

Your present brood equipment can be put above the Modified Dadant hive used as full-depth supers.

You get 40 per cent greater brood-comb area than in the "Standard" ten-frame Langstroth.

You get deep frames, large one-story brood-nest, frame space ventilation, excellence in wintering, swarming easily controlled.

**MODIFIED DADANT HIVE FEATURES**

1. Eleven frames, Langstroth length, Quinby depth.
2. Frames spaced 1½ inches for swarm control.
3. Extracting frames 6¼ inches deep.
4. Dovetailed body, regular reversible bottom and metal roof cover with inner cover.
5. Langstroth "Standard" equipment; easily used with this hive.

**For free booklet write any distributor of Lewis "Beeware," or to**

**G. B. LEWIS COMPANY, Watertown, Wisconsin**
**DADANT & SONS, Hamilton, Illinois**

TIME TO STUDY WOODS

CYPRESS LASTS PRACTICALLY FOREVER

For the Bee Man
This is the Period
"Between Hay and Grass"

CYPRESS DEFIES DECAY

While waiting for the honey-season to begin, suppose you investigate the relative values of different commercial woods. Few business undertakings call for more exacting care on the part of the buyer than getting the best lumber for the bee-man's use. In many respects bee-hive construction is like Greenhouse construction—both are most trying on the material used.

Cypress is the only wood that "stands up" in Greenhouse work. It resists the rot influences that infest the Greenhouse. No other wood is so thoroughly certified for this use as is Cypress.

If Cypress will "stand the racket" in Greenhouse construction it certainly will do the right thing by you in beekeeping.

READ CYPRESS BOOKS

Those who would get accurate information regarding Cypress wood and its extraordinary power to resist rot influences should provide themselves with copies of the Cypress Pocket Library. There are 43 volumes, each authentic and authoritative. **Write us** and tell us what subject you are interested in and will send you the appropriate booklet. We especially suggest you **write for Vol. 1,** with the unabridged U. S. Govt. Rept. on Cypress, "The Wood Eternal," that is a **buy** because it lasts so like—well, it lasts and lasts and lasts and lasts and lasts.

SOUTHERN CYPRESS MANUFACTURER'S ASSOCIATION

1251 PERDIDO BUILDING, NEW ORLEANS, LA. — 1251 HEARD NATIONAL BANK BUILDING, JACKSONVILLE, FLA.

FOR QUICK SERVICE ADDRESS NEAREST OFFICE

ALUMINUM HONEY COMBS

STANDARD LANGSTOTH SIZE AVAILABLE NOW

PRICE PER COMB 60c

Ideal extracting supers, modified. Dadant and Jumbo Combs will be ready for delivery after February 1, 1921.

*Write for our new catalog containing full description and prices on*

LEWIS BEEWARE
DADANT FOUNDATION
ALUMINUM HONEY COMBS

TEXAS HONEY PRODUCERS ASSOCIATION

1105 S. Flores St. P. O. Box 1048 San Antonio, Texas

# Root Service

*Why haven't you clipped this coupon?*

That purpose behind our organization to help Beekeepers get on--prompts us to remind you that we have a great enthusiasm in co-operating with you. We believe that there is a great future in this interesting profession. So we are happy to help in your work, in the interests of bigger and better business for you.

That is the reason we want you to use this coupon. It is self-explanatory. While we are mighty plain folks, we believe we know something about Beekeeping, as we have made a life work of it, and we are certain that the coupon will bring to you the individual advice of some one who knows Bees. We believe that the results will be gratifying to you.

Not only will this coupon put our Service Department at your disposal, but it will also bring to you the first three of our periodical circulars; letters dealing with current problems, and facts of particular interest to Beekeepers. The letters live up to their name, **"Live Topics for Live Beekeepers."** You cannot afford to be without either of these two services, as both are extended to you upon receipt of this coupon.

THE A. I. ROOT CO., Council Bluffs, Ia.
Gentlemen:
Please send me your circulars, "Live Topics for Live Beekeepers." And as I am interested in making the most of my honey production, I shall use your Service Department often. Just now I am particularly interested in:

_____Wintering_____Your New Airco Foundation

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Name_____________________________

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# AMERICAN BEE JOURNAL

JANUARY, 1921

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## SIXTIETH ANNIVERSARY NUMBER

**WHEN THE BEES STING** **YOU'LL NEED AN IDEAL "BEE VEIL" TRUE TO ITS NAME. $1.95 POST PAID IN U. S. A.**

**WAX—OLD COMB.** We pay the highest market price for rendered wax, less 5c per pound rendering charges. Our rendering process saves the last drop of wax for you. "Put your name on all packages."

**HONEY.** Send us a sample of your extracted honey. We also buy comb honey. Tell us how much you have and what you want for it. We pay the day shipment is received.

**THE FRED W. MUTH COMPANY, Cincinnati, Ohio**

*"THE BUSY BEEMEN"*

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**The Diamond Match Co.**
(APIARY DEPT.)
**MANUFACTURERS OF**
**Beekeepers' Supplies**
**CHICO, CAL., U. S. A.**

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**The Diamond Match Co.**
**Apiary Department** **CHICO, CAL., U. S. A.**

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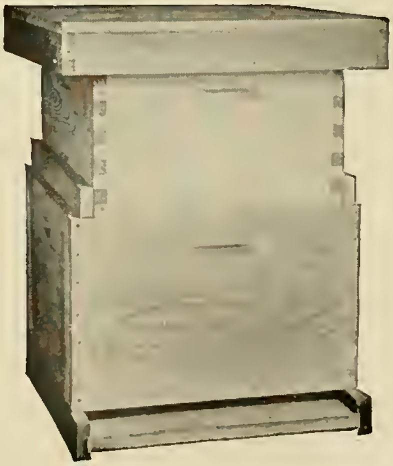
**MODIFIED DADANT HIVE**



Glance at this illustration to compare this hive with "Standard" Langstroth hive.

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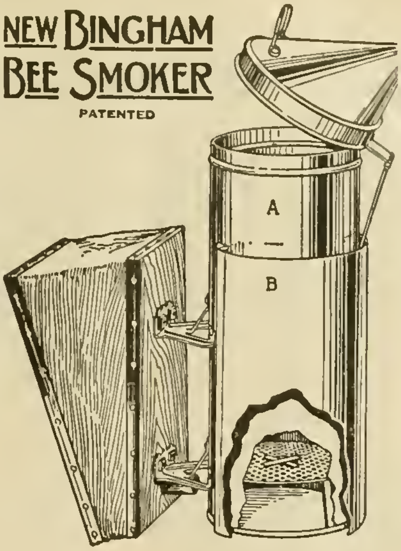

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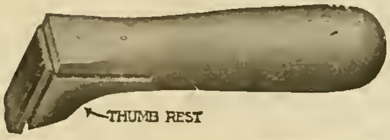

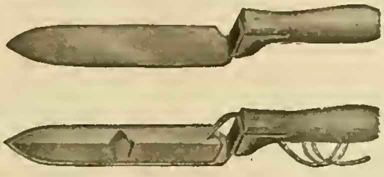

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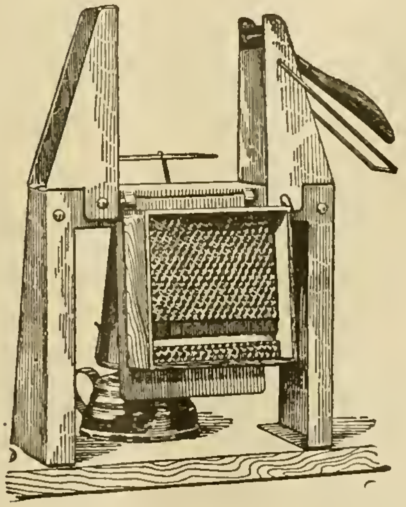

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VOL. LXI—NO. 1 HAMILTON, ILL., JANUARY, 1921 MONTHLY, $1.50 A YEAR

# Sixty Years of Beekeeping in California

BY J. E. PLEASANTS

Beekeeping was introduced into the west by men of courage and enthusiasm. The distance from the older settled centers was great; travel was slow, accomplished by primitive methods and fraught with difficulties.

We are indebted to that intrepid enthusiast, John S. Harbison, for the beginning of our industry. From Mr. Harbison's own account we get the following data of the pioneer apiary of California. John Harbison came to California in 1854, and for two years he studied the flora of the State, while engaged in the nursery business. At the end of this time, he sold out his nursery and returned to his old home in Lawrence County, Pennsylvania, with the intention of bringing out bees.

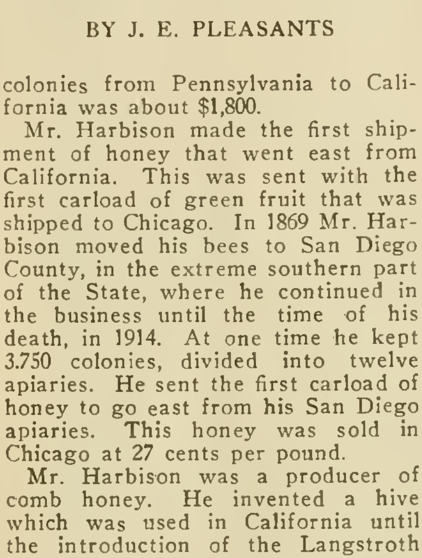
Mr. Harbison had learned the care of bees from his father in boyhood, so was well equipped for his undertaking. He tells of the care with which he prepared his shipment, which was to make the long journey by water from New York to San Francisco via the Isthmus. He had the lumber for his hives sawed three-eighths of an inch thick to save on weight, as the freight from Newcastle, Pa., to San Francisco was very high. The hives, of course, were small, so Harbison added a chamber about 3x8x13, well ventilated with screen, as a place for the bees to get off the combs and carry out the dead. He started with 116 colonies, and lost only six on the journey.

Being a man of pleasing address, Mr. Harbison made friends with all with whom he came in contact, and was accorded all possible assistance by the ship's officers.

His first apiary was located in the Sacramento Valley. He readily sold all the bees that he was willing to dispose of at $100 per colony, and mentions colonies being re-sold at $200. The cost of bringing the 110 colonies from Pennsylvania to California was about $1,800.

Mr. Harbison made the first shipment of honey that went east from California. This was sent with the first carload of green fruit that was shipped to Chicago. In 1869 Mr. Harbison moved his bees to San Diego County, in the extreme southern part of the State, where he continued in the business until the time of his death, in 1914. At one time he kept 3.750 colonies, divided into twelve apiaries. He sent the first carload of honey to go east from his San Diego apiaries. This honey was sold in Chicago at 27 cents per pound.

Mr. Harbison was a producer of comb honey. He invented a hive which was used in California until the introduction of the Langstroth hive here. He used two-pound sections. He was at one time one of the largest comb-honey producers in the world, and took many prizes for his exhibits at the Centennial and later exhibitions. Even a short time before his death he outlined a plan for a model apiary to be placed on the San Diego Exposition grounds in 1915. He was the author of a book on beekeeping, and his interest in his chosen pursuit never flagged.


Wm. Muth-Rassmussen, of Independence

Among other pioneer beekeepers were Mr. Wm. Muth-Rasmussen, Dr. Elisha Gallup, John F. Corey, R. Wilkin and N. Levering, the editor of the first bee publication on the Pacific coast. This was the "California Apiculturist," which was first published in 1882. Mr. Muth-Rasmussen was probably the first in California to use an extractor. He brought out a Peabody extractor in 1871. Prior to this all honey had been rendered out in sun extractors. Mr. Muth-Rasmussen writes that about three years after this he found others using home-made extractors run by gear wheels. In 1873 he and Captain J. T. Gordon called a meeting and organized the Los Angeles Beekeepers' Association, the first beekeepers association on the Pacific Coast. Mr. Muth-Rasmussen afterward moved to Inyo County, California, where he has since lived, and is a producer of comb honey.

There is an interesting story told in Gleanings of one of Mr. Corey's experiences, which well illustrate his determination to overcome difficulties. In the early days he was a mail carrier in the mountain regions of Northern California. On one of his trips he bought a small swarm of bees (probably a nucleus). This he carried on his shoulders over a hundred miles, part of the way on snowshoes.

The first Langstroth hive was used here in about 1872, by Mr. John Beckley.

Among later men notable for their

achievements in bee culture are M. H. Mendleson of Ventura County; Andrew Joplin, of Orange County; John H. Martin, whose charming articles in Gleanings under the pen-name of "Rambler" have been enjoyed by all readers of the magazine; M. C. Richter, of the San Joaquin Valley, author of the bulletins on "The Honey Plants of California"; Willis Lynch, instructor and apiarist of Stanislaus County, and Messrs. Hauser and Hogaboom, of the Sacramento Valley. Mr. Joplin's crop of extracted honey this year was about 25 tons from sage alone. Mr. Mendleson is probably at the present time one of the world's largest beekeepers. He came to California in 1880, and while he had kept bees previous to this, he worked with the veteran apiarist, Mr. Wilkin, to whom he pays this tribute:

"Mr. Wilkin was one of the most scientific, orderly and practical of men. He was a good and patient teacher, and was resourceful, and a genius in creating conveniences. It was a pleasure to work in his bee-yard, everything was so clean and orderly."

Mr. Mendleson's apiary, at its largest, contained 2,000 colonies, and his largest yield for one season was 101 tons, taking out and extracting as much as three and one-half tons in one day. The cut shows his Piru apiary of 700 colonies. This is on a hillside among most picturesque scenery, and is terraced. Each terrace contains two rows of hives facing the alley-way in pairs, a numbered stake between each pair, and an individual record kept of each colony. All queens are replaced every year or two with the very best Italian stock.

Among the many younger men who have made notable success as apiarists we will only mention two, for lack of space. Mr. L. L. Andrews, of Corona, son of the veteran inspector of apiaries of Riverside County, and George J. Brown, of Orange County. L. L. Andrews got his start by digging 24 colonies of bees out of rock caves and trees. He added to these by purchase and increase until he now has 1,000 colonies, and his crop this year from orange and sage was 60 tons. Mr. Brown began as a boy, some ten years ago, and now has 800 colonies. His crop this year was 50 tons.

George J. Brown, of Tustin, Calif.

In the beginning of the bee business in California we had several problems to solve. The package problem seemed one of the most complex at the start, but was the quickest solved. We used kerosene cans mostly, though some used barrels. The experience of some of the beekeepers who tried barrels was harrowing to relate. I had two neighbors who stored their honey in barrels, waiting for a better price. They never got it. All through that winter, which was quite dry, the honey leaked out just about as fast as the bees could take it up. My bees went through fine that winter, as they were near enough to my neighbor's honey barrels to use them as feeders. Those of us who used kerosene cans will never forget those days of cleaning and soldering, when preparing for a honey flow. But from the ancient kerosene can was evolved the modern honey can and case, California's bequest to the extracted-honey producers of the country.

The price of honey was good, at the beginning, for a few years. Then it dropped very low. I remember selling extracted honey in 1877 for 9 cents, but from 1877 until about 1884-1885, the beekeepers were in luck if their honey netted them 3 cents.

The cause of this was exorbitant freight rates, on the one hand, and the treatment we received at the hands of the commission men on the other. In fact, matters got so bad that producers quit sending their honey to the commission houses. That forced the buyers to come into the field; and while prices were not what they should be, we at least had the satisfaction of selling our own honey. Now the California Honey Producers' Exchange bids fair to solve the marketing problem. This was organized over two years ago, for the purpose of marketing honey and buying supplies. It was organized with the assistance of the State Market Director, and is modeled to some extent on the plan of the fruit exchanges. There are about 70 per cent of the commercial beekeepers of the State in the membership, with new members coming in regularly. In addition to furnishing honey in carload lots to the buyers, the Exchange is now putting up honey in small packages, which are being sold to wholesalers, who do the distributing. The California Exchange is young, but so far is meeting with a fair measure of success.

L. L. Andrews, of Corona

Up to about 30 years ago most of the honey of the State was produced in the southern part, and exclusively from wild plants. Now beekeeping is a thriving industry in the northern part, also, as well as in the large interior valleys. While we still depend upon the wild flora for our mountain apiaries, the bee forage along the foothills and in the valleys has been largely increased by the large acreage planted to oranges and beans, in the coast counties, and by the alfalfa fields of the interior valleys. The Sacramento and San Joaquin valleys have hundreds of thriving apiaries fed by alfalfa and lipia. Alfalfa does not furnish nectar in the cool coast region, to anything like the extent that it does in warm inland valleys. Another comparatively new section, rich in the production of honey, as well almost as other resources, is the Imperial Valley, lying in the extreme southwestern portion of the State. This valley is truly one of the wonderlands of the Southwest. A reclaimed desert, as it were, but of a soil rich in silt washed for ages from the overflow of the Colorado River; soil which only needed water to produce anything in the dry, warm climate in which it lies. Water is now had in abundance, and its alfalfa fields yield an ample supply of nectar to thousands of colonies of bees. While honey is not produced commercially in all parts of California, in the last twenty-five years the industry has very materially increased. We still produce almost as much from the native plants, and the great increase of forage from cultivated plants has enabled many more to engage in the business. The wild pasturage of Southern California is pretty thoroughly stocked, so there is little room in the sage belt for beginners, unless they buy an old range.

I believe California now leads in the production of honey. The honey for the most part is of excellent quality. There is no more delicately flavored honey than that produced by the sages, and it is of excellent body when allowed to ripen properly. The orange honey is also beautiful to look upon, and is of a spicy flavor, recalling the fragrance of the orange blossom itself. It is a very common practice for beekeepers here who can obtain suitable locations to move from orange to sage and thus get two flows in one season. Some then move to the lima bean fields and get three. The bees there are largely Italian, though Cyprians, Carniolans and Caucasians are used by some. Of course, there are plenty of hybrids. Almost all the beekeeping counties have county clubs, which serve to keep the members in touch with each other's work and socially.

The State has a good foulbrood law, providing for an inspector for each county where the beekeepers demand one. The system of inspection has been thorough, the inspector giving his whole time to the work during the season, and subject to call at any time. American foulbrood has been greatly decreased, and is altogether under control. European exists in some localities, but is not near the menace that it was.

California.

## LOOKING BOTH WAYS

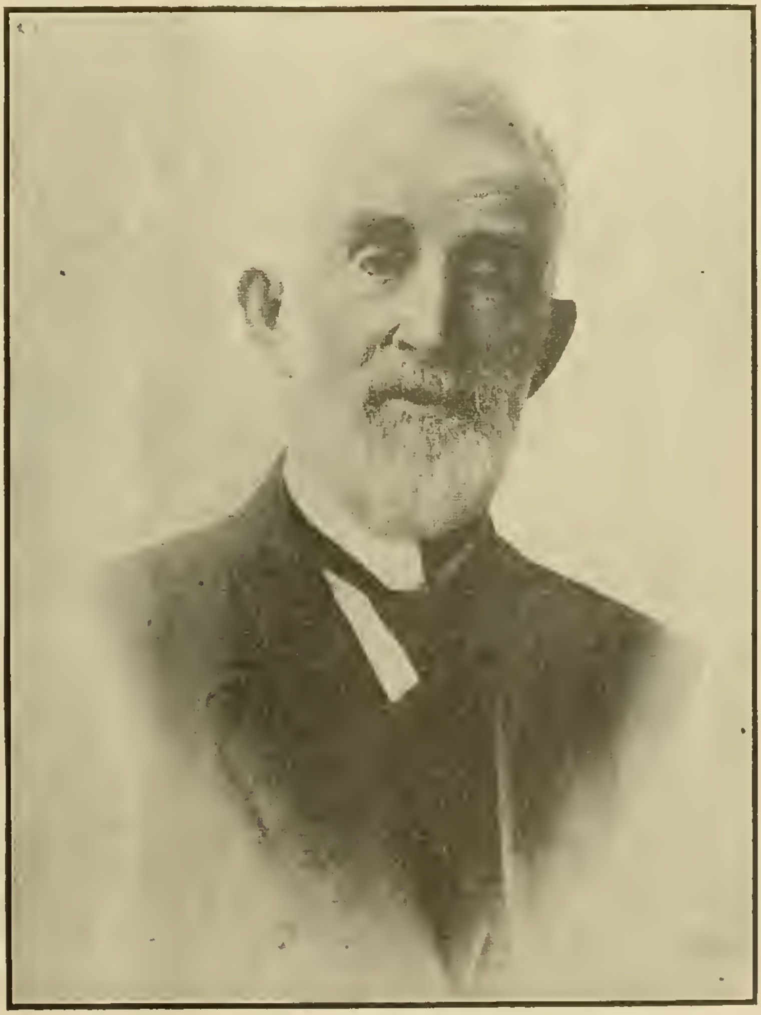
By Dr. E. F. Phillips

The anniversary of the founding of the American Bee Journal gives opportunity to look backward over what has happened during the sixty years since it was first published. Those who live in the past and direct their view only backward fail to see the bigger things that are ahead and, on the other hand, if we look forward we fail to take advantage of the lessons of the past and lack perspective. Modern beekeeping is so new that there has not been time for a long historical record, but we can learn some lessons from what is now a matter of record.

The founding of the American Bee Journal followed closely the invention of the movable-frame hive by Langstroth, which made commercial beekeeping a possibility. Samuel Wagner, the worthy founder of the Journal, was a close associate of Langstroth and did much to connect the American work with that done in Europe. The early issues of the American Bee Journal were filled with excellent articles of scientific interest, and these early issues are still valuable for permanent record. In those days the interest of the beekeeper was largely in a study of the things that bees do, and not so much in what the beekeeper does. This work and that of early American beekeepers was the basis for the beekeeping of today, which rests almost solely on observations on bee behavior and not on development in apparatus. There was a time in American beekeeping when the sentiment seemed to be that we can get apparatus to do the work of the beekeeper, but this almost resulted in the destruction of the industry in the days of comb-honey production. Undue emphasis on apparatus and systems of management took the attention of beekeepers away from the needs of the bees themselves, and as a result there was a tendency to squeeze every possible drop of the honey away from the brood-nest and into the supers. This policy resulted in small colonies, and in the death of an abnormally large percent of the bees in winter.

If one could get far enough away to view the whole industry it would be clear that, as a result of this sort of teaching, there is today a lack of attention to the behavior and needs of bees and comparatively too much attention and thought is given to apparatus. As a result of the type of teaching prevalent thirty years ago, the common practices throughout the country are almost everwhere deficient, in so far as the needs of the bees are concerned. There is almost always too little honey left with the bees, not sufficient protection is given them in winter and their needs in spring are not supplied adequately. This is a remnant of an earlier day in American beekeeping and is still greatly retarding the proper development of the industry. It is essential to call attention to the difference between the common practices in beekeeping and those of the successful beekeeper, for it is not intended that the foregoing statement should be applied to progressive beekeepers who study their problems adequately.

This look at history and at the present practices of what we may call the average beekeeper, which are the result of what has gone before, should not fail to point out to us what should be the line of attack on our problems for the future. In so far as beekeepers of the past have failed, their failures should serve us as lessons of what to avoid. It is equally important that we avoid the tendency to claim for the present day all of the good things in beekeeping. We are constantly confronted with "discoveries" that we later find clearly described in Langstroth or Quinby, and this failure to keep before us the good things of the past is as bad as to hold fast to the weaknesses of the



J. S. Harbison, the pioneer honey producer of California.

past. It is necessary, as suggested by the title, to look both ways.

The recent tendency to emphasize the importance of winter protection, the discussion of the use of larger hives, the emphasis on the prevention of European foulbrood rather than its cure, and the many experiments on methods for wiring frames to prevent sagging, and thus to get larger brood-nests, all point to a realization that our colonies are often not strong enough before the honeyflow. Langstroth, in his first edition, emphasized the necessity of keeping all colonies strong, so this is no new idea. During the period of depression, beekeepers departed from this ideal and we have not yet fully recovered from this. It is now coming to be generally realized that only strong colonies are profitable and by some means or other the beekeepers of the future will have even stronger colonies than are found today, even in the apiaries of many good beekeepers.

The word "strong" is not sufficiently accurate, because it does not mean the same to everybody. Our books on beekeeping usually state that a colony of bees in good strength may consist of 50,000 to 70,000 bees. Years ago Charles Dadant had 70,000 cells of brood in some of his colonies just before the clover flow, and in the Bureau of Entomology apiary it has been possible to average this amount by the time of the tulip-tree honey flow in early May. Some of our colonies have had brood enough at that time to fill 15 Langstroth frames, and as this is possible this should, for the present, be our aim for all colonies. One still occasionally hears a beekeeper argue that colonies should not be too strong in the spring, but this idea is rapidly passing away, as there is no logical basis for such a belief, provided the proper swarm control measures are practiced.

Looking forward, then, it is safe to predict that the future is to be one in which the strength of colonies is a prime consideration. Whether we are to get this by the use of larger hives is still a debatable question, but the hive alone cannot produce large colonies. Whatever hive is used, and after all, the hive is only a tool, it is clear that the essentials are better methods of wintering, frequent requeening, and especially stores in spring more abundant than is now usual.

If only these big essentials can bore their way into the minds of beekeepers there is scarcely any limit to the beekeeping of the future. Vast stores of nectar are now lost from lack of colonies to gather them, and perhaps especially from the weakness of the colonies at the proper time. If beekeeping is to grow, as we hope it will, it must become more reliable by the use of strong colonies.

Since future success seems to depend on greater efficiency in having more bees to the colony, it will be clear that the future successful beekeeper will be a student of bee activities. Looking backward, we have seen that the foundations of the industry were built by such students, and looking forward we must expect a great revival in interest in such work and many new investigations. The recent rapid development of commercial beekeeping has naturally directed attention to the devising of improved apparatus and to plans for efficiency in systems of operations. The depression of the comb-honey era, however, resulted from undue emphasis on these things, and we may well learn a lesson from this.

If the future successful honey producer is to be a student of bee behavior, and if success is to depend on the proper application of the facts that obtained to colony management, it will be evident that the future of beekeeping calls for specialization. It can scarcely be expected that the many thousands now owning bees will sufficiently study the problems of the beekeeper so as to make their beekeeping financially profitable. The spread of the brood diseases also contributes to the confusion of the uninformed beekeeper. It does not take the son of a prophet to predict a great development in specialist beekeepers.

Immediately the question arises, what will be done with all the honey produced when so many are engaged in commercial beekeeping? The same question has confronted man in all branches of specialized agriculture. The questions are not all answered, but in enough cases increase in production has been accompanied by efficiency in marketing and in making a market to relieve us of fear on that score. It is perhaps unfortunate for the beekeeper that the honey market is so influenced by the sugar market but, in spite of this handicap, a proper organization of commercial producers will help wonderfully. The time is ripe for such organization.

Andrew Joplin, of Santa Ana

In looking back over the sixty years since the first issue of the American Bee Journal we can see many mistakes and blunders. We can see where well-intentioned men directed the attention of American beekeepers into channels which resulted into disaster. The industry has often been hurt by poor leadership, yet through the years there have been constantly present wise leaders who have counteracted with helpful influence. The grand total has led to the present day success. To look forward one must be an optimist. If we profit by past successes and failures our paths will lie in more pleasant places. Any one can see that there is coming on a new generation of beekeepers of wide vision, with keen business sense and scientifically minded. Under such leadership we may expect a brilliant future.

Washington, D. C.

## LOOKING BACKWARD

By J. E. Crane

THE sixty years from 1860 to 1920 well cover the development of scientific beekeeping in the United States. True, the Rev. L. L. Langstroth had brought out the movable-comb hive a few years before, and Moses Quinby had published his first book explaining the mysteries of beekeeping, yet, for the most part, beekeeping went on very much as it had, for the previous two or three thousand years.

Langstroth and Quinby surely laid the foundations deep and broad on which the superstructure of scientific beekeeping in the United States has been built. In 1860 the first American journal devoted to beekeeping was published, a great step in advance of previous conditions. At about the same time Italian bees were first introduced into this country, greatly increasing the interest of beekeepers in the business, for from some accounts about them we thought they must be nearly as large as bumblebees and could work on red clover as well as white. The publication of the American Bee Journal was discontinued during the Civil War, and again started after the war, thus, increasing the interest in beekeeping, and the more careful study of the habits of bees.

Soon Beekeeping Associations, both State and County, sprung up like mushrooms over much of the north, and interest in bees increased. There were no supply houses in those early days, and we had to make our own hives as best we could. All sorts of hives were invented and, of course, patented, very few of which were as good as the Langstroth hive, brought out a few years before.

It was in the spring of 1868 that the first account of a honey extractor was published in this country, and of course in the American Bee Journal.

As my hands were full at that time, I did not attempt to make one until the next spring, when I used a small molasses hogshead for a tub, with wooden shaft and reel and a large wooden wheel with a strong cord running from the wheel around the shaft. Well, it worked! and I took from one hive that season 240 pounds of extracted honey. That fall I visited Moses Quinby, with whom I had quite an amount of correspondence, and purchased several hives, for one of which, containing an imported queen, I paid $35. He told me he had made an extractor the previous spring, using the gearings of an old farm fanning mill to secure the necessary motion, but as the season was poor he had been unable to use it.

I was delighted with Mr. Quinby, for he seemed to be a large-souled man, as well as an extensive beekeeper. Nothing seemed to delight him more than to be helpful to others. Through him I learned of his brother in New York, a commission merchant of the old type, as honest as the day was long. He told me later that every pound of white honey sold that year in New York for 50 cents a pound; that is, honey, glass box and all, wholesale, which would make it about the same as this year.

Moses Quinby was the first to suggest and use a hand bellows smoker. I believe it impossible for the younger generation to realize the difficulties attending the rapid manipulations of hives without a smoker. We used for the most part a stick of dry rotten wood, setting one end on fire by the kitchen stove. If it was not sufficiently decayed, it was likely to go out, and if too rotten it burned too fast and our face and eyes grew red as we blew the smoke among the bees, and sparks, too, and our clothes were sometimes set on fire. So I have no disposition to say that the former times were better than today.

Soon after the honey extractor came into use, extracted honey was shipped to the city, and I remember very distinctly D. W. Quinby's letter in, I believe, the American Bee Journal, asking beekeepers not to send any extracted honey to New York, as there was no demand for it. Some different today!

There was no comb-foundation in those early days, and we saved very carefully every scrap of white comb, cutting it into small pieces one inch or more square, if we had enough of it, and dipping one edge into melted wax and sticking it into our supers for starters and guides.

It was about 1880 that comb-foundation first came into general use, perhaps a little earlier, and has been a great help in developing the business of beekeeping, giving us straight combs of even thickness, with a great saving of wax.

Sixty years ago the wintering of bees was but little understood, and largely shrouded in mystery, while today the principles of succesful wintering are quite generally known.

Brood diseases have been carefully studied, the symptoms fully described and best methods of treatment given, so the average beekeeper may not long be in ignorance as to the condition of his bees. This alone is a tremendous gain over our knowledge of a few decades ago.

The scientific rearing of queens has become a well established business, enabling the small beekeeper to secure queens at a reasonable price or enjoy the fun, himself, of rearing enough for his own use.

Magazines devoted to the interests of beekeepers have multiplied, some of them to meet with an untimely end; yet they have, perhaps, been the most efficient means for the spread of a correct knowledge of successful beekeeping.

A large number of books on artificial queen-breeding and beekeeping have been published, all of which have been most helpful.

Outyards have become common in many parts of the country and the auto-truck has been pressed into the service of the enterprising beekeeper and found almost as much a help as movable combs, the honey extractor, or a reliable smoker, in increasing the products of the hive. Little was known of the honey resources of the country 60 years ago, while today we have a very general idea, from the Atlantic to the Pacific, and from Manitoba to the Gulf. Some sources of honey have nearly disappeared, as basswood; while others, then almost unknown, have become of great importance, as alsike clover, sweet clover and alfalfa.

We did not have, in the former years any houses for the sale of beekeepers' supplies, while now you can buy anything from a three-eighths-inch nail to a $50 extractor, hives, foundation, sections, smokers, queens, cages, etc. In fact, everything a practical beekeeper wants, and a great many things he has little use for.

It was not my good fortune to become acquainted with many of the extensive beekeepers of sixty years ago. I have spoken of meeting Mr. Quinby; I also met Mr. Harbison in Sacramento about 1875. He was at one time very extensively engaged in beekeeping on the Pacific Coast, and was perhaps the most successful producer of comb honey in California. He seemed an exceedingly modest, retiring man, for one who had met with such success, and I doubt if his life and work were fully appreciated by American beekeepers.

Capt. J. E. Hetherington began beekeeping on an extensive scale soon after the close of the Civil War. He was an exceedingly active man and soon became one of the most extensive beekeepers of the east. His life and work were a great stimulus to keeping outapiaries here in the East. It was a great pleasure to have known him.

What a wonderful period have the past sixty years been in developing the business of beekeeping in America! And yet, perhaps, we should not feel too much elated over what has been accomplished, when we remember that today, probably, not more than one beekeeper in four takes a bee journal, or one in three who has bees in a movable-comb hive, ever handles them any more than if they were in box hives. There is still work ahead if we would reach the high level to which we aspire.

Vermont.

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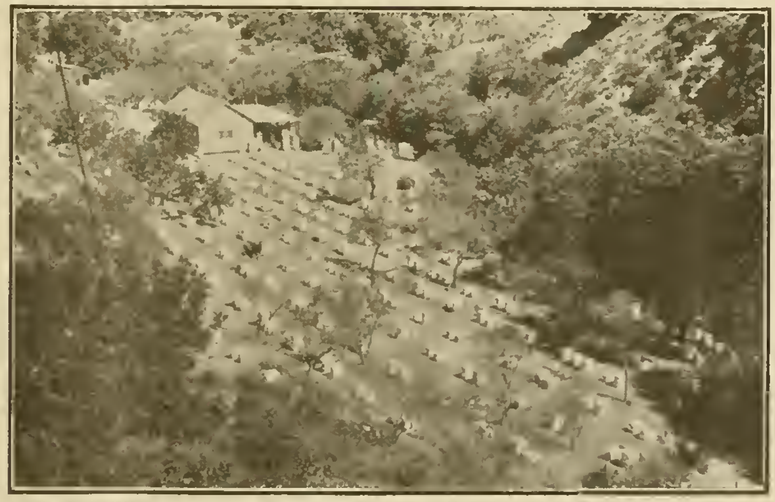
**Sweet Clover in Canada**

"Its presence this year in quantity has dispelled some of the notions formerly held by many beekeepers. Lack of acreage must have been the cause of the claims being made that it is a slow yielder. A friend of mine near me had a very strong colony on scales, and in one day they gained 23 pounds—nothing slow about that. One very strong colony at one of our outyards stored just about 500 pounds in five weeks, and fully one-third of the days were unfavorable for bees working. But this colony has during the last three years stored about double the amount of any others in the yard."—J. L. Byer in October Canadian Beekeeper.



Mendleson's famous Piru apiary

AMERICAN BEE JOURNAL

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THE STAFF

C. P. Dadant ........ ........Editor

Frank C. Pellett ........Associate Editor

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## THE EDITOR'S VIEWPOINT

### Our Cover Picture

The queenbee shown on this month's cover is reproduced from Barbo's famous work, "Atlante Di Apicoltura," which was published in Milan, Italy, about 1873.

These microscopic studies were engraved by Designer Clerici and were published in plates to the number of 30, at 14 lire for the set ($2.80). Count Gaetano Barbo, the author of these microscopic studies, was a man of leisure, who made beekeeping a life study. He died in September, 1909.

### Happy New Year

For the many compliments, praise, good wishes, that we are receiving, perhaps more than ever before, and from every direction, even from across the seas, we return our thanks. The American Bee Journal will try to deserve still more.

To you, reader, beekeeper, we likewise wish success. May your bees winter safely, breed early, multiply freely, harvest honey copiously, and fight their enemies successfully. May your honey be well flavored and light in color. May your children be healthy and of clear complexion, as they are sure to be if they eat honey in plenty. May your neighbors be kind, as they should be if you give them the glad hand and an occasional comb of honey, to smooth over any bitterness from bee stings or other troubles, imaginary or real. And, in conclusion, may you read the American Bee Journal, as well as all the other bee magazines, till the end of your days! Amen!

### Stenographic reports.

Only a few of our beekeepers' meetings are reported wholly by stenographers, and in few of these cases are the stenographers acquainted with beekeeping. This causes some very incongruous situations, for a stenographer who does not understand the meaning of what she is reporting is likely to make some very ludicrous mistakes. A condition of this kind is frequent in the published reports of the Illinois State Beekeepers' Association. While I was President of that Association I insisted upon reading the manuscript myself, before it was printed, which required two or three days, and occasionally I threw out some 10 or 15 pages of report which had "neither head nor tail."

The report of 1919 is now upon my desk and I find the usual number of "quid pro quos," which must be quite puzzling to the reader of such a report. For instance: On the question of whether the bees could puncture grapes, I stated that the birds did the greatest damage and that the bees gathered only the remnants. The stenographer made me say: "The holes made by the birds are usually all on one side of the **bush** (read bunch) .In another place, I spoke of "having the combs **straight** in the frames." The stenographer got "the combs **stretched** in the frames."

A beekeeper asked: "What is the difference between the modified Dadant frame and the Langstroth?" The stenographer put it: "What is the difference between the Modified Dadant **Hive** and the **last issue?"**

Langstroth," "last issue!" Sounds very much alike, don't it? But the meaning is somewhat different.

Then the reply was similarly garbled. I wonder whether any of the speakers at these meetings finds his or her words reported so that he or she will recognize them!

There are three remedies for this trouble:

1. Quit employing stenographers who, however competent in ordinary matters, are thoroughly incompetent in beekeeping terms.
2. Employ only stenographers who are beekeepers themselves.
3. Let each speaker's talks be sent to him for approval, or let an official of the Association pass upon the statements made, rejecting all that do not seem plausible and intelligible .

In the long ago, Mr. Hutchinson, who was Secretary of the National, used to secure for the reports a stenogropher who was thoroughly acquainted with the terms and technical expressions in beekeeping, so that no one needed to blush in finding himself in print as having stated a lot of nonsense

These difficulties have existed for 15 years or more in the Illinois Association reports, and they probably exist also in other stenographic reports of bee meetings.

### Cure of Foulbrood by Fasting

Schirach (1771) was the first man, to our knowledge, to recommend causing the bees to fast in order to cure foulbrood, or, as he called it, "false brood." He wrote:

"The most simple remedy for 'false brood' is to remove all the combs of the hive, which are infected with it, and to cause the bees to fast for two days, after which one may give them some new combs, and give them the remedy prescribed at the chapter 39."

This remedy consisted in honey diluted in hot water and flavored with nutmeg and saffron.

### Deceitful Names

Our attention was called at the same time and by two separate parties to advertisements of cheap syrups, mixed with a small quantity of honey by two different packers, the one in the South selling it under the name of "Honey Gold," the other in the Central West selling a similar product under the name of "Red Clover." The latter product is labeled as containing 5 per cent of honey and 15 per cent of sugar syrup, with 80 per cent of corn syrup.

Of course, these names of "honey gold" and "red clover" are intended to give the impression that they are high grade products, while the syrups so named have probably a value, for sweetening, of much less than honey.

These people are evidently keeping within the law. We cannot expect them to change their labels. But we should take a lesson. When we have a product much higher in value, we should advertise it in all possible ways and let the people understand what a great difference there is between real honey and those corn starch products which sell only because so well advertised.

### Alsike Clover

Farmers' Bulletin 1151, U. S. Department of Agriculture, shows us that alsike clover can grow better in a pot completely submerged in water than in ordinary normal conditions. How many of us knew that? It is a wonderfully good plant for honey, in many districts, and it would pay to grow it in place of red clover, for it is a better stock food. It has finer stems.

### Iowa Has Good Crop

There are few people in Iowa who appreciate the amount of honey produced in that State. A recent estimate was made of the amount of honey produced in Woodbury County the past season. As nearly as could be determined, 1,500,000 pounds were produced in the one county in 1920. This particular county probably has more large producers than any other in Iowa. Sweet clover is the principal source of nectar. It would be interesting to know how many counties in the entire country produce as much honey as Woodbury County, Iowa. The crop in the western part of the State was far better than in the eastern part.

### Push Local Sales

In the Eastern States many beekeepers report their entire crop of honey sold at good prices. In the west some large producers report most of the crop still on hand and no demand. The future price of honey depends to a great extent upon the present activity of the beekeeper in stimulating the local markets. If every beekeeper who has sold his own crop will use every effort to handle some of the crop still in the hands of the less fortunate producer it will help greatly toward preventing a crash in prices. We must expect a decline to keep pace with the drop in prices of other commodities, but it need not be a crash.

Now is the time when every producer should do everything possible to extend the sale of honey. If the beekeepers of the east will help to dispose of the surplus in the west our future markets will benefit greatly from the effort.

### Increasing Consumption

According to F. B. Paddock, State Apiarist of Iowa, the consumption of honey has increased in that State by one-third in the past three years. This is the period covered by the work of his department, which was established by law on July 1, 1917. While the department has helped to increase production by the spread of information concerning better methods, the publicity attending such efforts has interested the general public and increased the consumption of honey at home. The beekeepers of any State can make no better investment than to secure a department of beekeeping at the agricultural college. It is interesting to note that where the best work is being done at the colleges of agriculture, prices of honey rule highest and the demand is best. In our news columns mention is made of total production of Iowa beekeepers.

### Possible Usefulness of Moth Larvæ

They say that there is "nothing new under the sun." But I believe this is news:

Mr. Etienne Giraud, of Le Landreau, France, writes us of a physician who is seeking a serum for curing tuberculosis. This Dr. Charron, of Nantes, holds that the bacillus of tuberculosis is enclosed in a waxy envelope which nothing, so far, has been able to destroy. Knowing that the moth-worm eats up beeswax, he is trying to produce a serum which would have the same power, and holds that he is succeeding in producing it, and that the gastric juice produced by those wax-moth larvæ serves in dosing it and testing it. He has so much faith in it that he has put into the papers an advertisement asking for moth-worms, for which he offers 500 francs per kilogram (a trifle better than $14 per pound, at exchange rates). A copy of this advertisement is under our eyes.

The question is to secure safe arrival of the worms. So we may expect some day to see advertisements of moth-worms, safe arrival guaranteed. This is earnest. Tuberculosis is such a dread disease that it is worth while for the world to try all sorts of remedies. We are told that the Academy of Medicine, of Paris, is to make an investigation of this discovery and pass upon its efficacy. In case of success, Dr. Charron would be immortalized like Jenner, Pasteur, etc.

### Meetings

Our editor has, for years, promised to visit beekeepers' meetings in the southeast. He is now planning to be in Wilmington, North Carolina, at the State meeting of beekeepers, January 11. From there he will go to New Jersey, at Trenton, January 13. Mr. Elmer G. Carr, of Egypt, N. J., reports a membership of 490 members in New Jersey, and has arranged a 2-days' program, in which there will be addresses from the following people: President Richard D. Barclay; Dr. Geo. H. Rea, of Ithaca; Howard M. Myers, of Ransomville, N. Y.; Charles H. Root, of Red Bank, N. J.; Dr. Thomas J. Headlee, of New Brunswick, and C. P. Dadant. A banquet will be held at the Carlton Restaurant on the evening of the 13th.

From New Jersey, the editor will go back to South Carolina, stopping at Washington, D. C., the 15th and 16 , and attending a meeting of Virginia beekeepers at Lynchburg on the 17th. Meetings are to be held at Clemson College, Anderson, Greenville, S. C., January 18 to 21; from there he will go to Nashville for the 27th.

### Beekeeping and Aviation

It is written in the fables of mythology that Dædalus, being a prisoner in the Labyrinth of Crete, with his son, manufactured some wings out of birds' feathers fastened together with beeswax and that he and his son escaped out of the Labyrinth by this means. But the son, heedless, as many young people are, flew too high. The sun melted the wax of his wings and he fell into the Egean Sea. Our modern aviators have not yet resorted to beeswax to fasten together the wings of their planes. Yet they are not much afraid of the sun's heat when they fly too high. Many pretty stories like this are shattered by the discoveries of modern science and daring. Too bad!

### Does the Queen Know the Sex of Her Eggs?

It is well known that the queen rarely makes a mistake, when she lays her eggs, never laying worker-eggs in drone-cells, and rarely laying drone-eggs in worker-cells. Does she then know the sex of the egg which she is about to lay? Reaumur thought so, and said so, which excited against him the feelings of his neighbor's wives in the country, as they refused to believe that a simple "fly" was endowed with a faculty of which they were deprived—that of knowing beforehand the sex of their progeny.—(Huber's Unedited Letters.)

### Poisonous Sprays

The Purdue University Apicultural Experiment Station publishes in Bulletin No. 247, an account of experiments by Dr. W. A. Price upon the poisoning of bees by solutions of arsenic, such as lime sulphur, arsenate of lead, etc. The tests and tables are too extensive to take place in our columns. It is sufficient to quote the conclusions, which show that a very small amount of arsenic is sufficient to kill bees; that the bees work freely on sprayed trees and that, for the sake of the bees, fruit trees should never be sprayed with arsenical solutions while they are in bloom.

### The Mid-West Show

The Mid-west Horticultural show, held at Council Bluffs, Iowa, from November 15 to 20, was probably the biggest thing of its kind ever staged in America. The exhibits were very extensive and of fine quality. Through its fortunate affiliation with the Iowa Horticultural Society, the Iowa Beekeepers' Association was able to have hive products recognized as allied to horticulture. Honey was accorded a place in the premium list and a few men made very creditable exhibits. The beekeepers, however, were far behind the other lines in the extent of their showing.

There were exhibits from county associations of potato growers in Wisconsin, as well as dozens of individual exhibits from various sections. There were wonderful exhibits of cut flowers from many States. Apples from Minnesota and Wisconsin were arrayed against apples from Missouri and Arkansas, but only the Iowa and Nebraska beekeepers living in the close vicinity of Council Bluffs made exhibits.

Beekeepers complain of a falling market, yet when a great show, put on at a cost of many thousands of dollars, offered them space and premiums, they overlooked the opportunity of bringing their product to the thousands of visitors who attended. The few beekeepers who did come put up very fine exhibits and were well paid for doing so, both in premiums and in the advertising which their products received.

We are advised by the management that bee products will be made a permanent feature of the show and that if possible larger premiums will be offered next year. We sincerely hope that beekeepers of the middle west will wake up to the importance of a really big display, such as is put on by apple growers, potato growers and florists.

## SIXTY YEARS AMONG THE BEES

By Frank C. Pellett

DR. C. C. MILLER'S beekeeping and the American Bee Journal came near being twins. The Journal was founded in January, 1861, and on July 5, of the same year, the Doctor became a beekeeper. Dr. Miller became a beekeeper without previous intent. A stray swarm passing his home was hived in a barrel by Mrs. Miller while he was in Chicago on business. Mrs. Miller was so badly stung that she was sick abed as a result, and ever afterward was so sensitive to stings as to prevent her from having anything to do with bees. Doctor Miller knew nothing about bees at that time, but soon began to feel a great interest in the colony in the sugar barrel. They were wintered in the cellar and the following spring he sawed away that portion of the barrel which was unoccupied. Later he bored holes in the top of the barrel and placed a good-sized box over it for surplus honey. The first season he secured a swarm, which was hived in a new box-hive made after the directions of Quinby. He also bought two swarms to be hived in boxes which he furnished. He thus came to the close of his second season with four colonies of bees.

The next year he bought Quinby's book and some movable-frame hives. Asscording to his account in "Forty Years Among the Bees," it was not until 1867, when he took 131 pounds of honey, worth 25 cents per pound, that he found the balance on the right side of the ledger. He began the next year with seven colonies and had $10.40 more than the total cost of bees, hives and fixtures to that date. His experiences were such as are common to beginners everywhere. There is no royal road to success in beekeeping, as in other lines. He speaks as follows:

"At any rate, my friends could no longer accuse me of squandering money on my bees, for there was that $10.40, and the time I had spent with the bees was just as well spent in that way as in any other form of amusement. Indeed, at that time I am not sure that I had much thought that I was ever to get any profit out of the business. Certainly I had no thought that it would ever become a vocation, instead of an avocation."

It is the little things that change the current of our lives. We often go about looking for something big, while neglecting the little things which would grow big. The incident of the hiving of a swarm of bees in a sugar barrel, during his absence from home, could hardly have been looked upon as an important event in his life by the Doctor. Yet, as a result of it, he became the world's best loved, if not the world's best known, beekeeper, leaving untold thousands to mourn his passing when he crossed the Great Divide.

When the news came that Doctor Miller was dead, it was a real shock. Although we had expected it for many months, we were not fully prepared for the actual event. The senior editor and he had been close friends for many years. We felt that the American Bee Journal, with which Doctor Miller had been closely associated for so many years, should give an extended review of his life. None of us felt equal to undertaking anything of the kind just then. It seemed best to make a simple announcement of his passing and later, when the wound was not quite so fresh in the hearts of the thousands who loved him, to try to pay a little tribute to his memory.

In the December, 1915, issue of this Journal, appears an announcement of Dr. Miller's personal recollections. In that announcement, written by Mr. Dadant, is given something of the editor's personal appreciation of the work of our lamented friend. In the January, 1916, number begins the series of personal recollections. The Doctor was rather hesitant in preparing them. He seems to have had the impression that the editor wanted them to serve with an obituary notice, and that they were to be carefully laid aside until he had passed on before they were used. It was nearly two years from the time he was asked to write them before the letters came to hand. We believe that our readers who have kept their old Journals will delight in reading again those letters in the January, February and March, 1916 numbers. There is not much said about his beekeeping experience, but he gives us a peep at the principal events of an interesting life. Regarding beekeeping, he wrote as follows:

Cordially Yours,
C. C. Miller.

"To get a goodly sum of money for a crop of honey is a pleasure. But I don't think **that** alone would have held me to beekeeping. For every minute I have spent thinking of the money I'd get from my bees, I've spent twenty minutes—more likely an hour—in studying over plans and projects for improvement in the management of bees. And at 84 I think I have just as many schemes cooking as I had at 30. Most of them have turned out the wrong way, but enough have succeeded to be of some use. I never made any great invention, never had the slightest thought of inventing a hive; but some little thing here and there, perhaps making some slight change in the plans and implements of others, entitles me to credit some things."

It was in 1869 that he became a subscriber to the American Bee Journal, and in 1870 he began writing for its columns. He wrote very sparingly for many years. It was only later, when he wrote from long experience and careful observation, that he turned out copy freely. It is for this reason that his writings are of special value.

At the beginning of the year 1885, a "Query" department was established in the American Bee Journal by Thos. G. Newman, who was then editor. His plan was to send the questions to a number of different persons who were prominent in the beekeeping world. Several contributors would thus reply to the same question. Within a few months after this department was established, Doctor Miller's name began to appear. When George W. York bought the Journal, in 1892, he had never owned a bee. For some time previous to that date he had been employed by Mr. Newman, and so was familiar with the mechanical and clerical duties of the office. Casting about for expert assistance, he came more and more to depend upon Doctor Miller. At the beginning of the year 1894, the "Question Department" was established with the Doctor in charge, and he continued to answer questions for this Journal's readers until the time

Doctor Miller, as he welcomed the associate editor on his visit to Marengo

of his death, nearly 26 years. In addition to answering questions, he wrote much of the editorial matter and was designated as associate editor, a position which he continued to occupy until after the Journal passed under the present management.

Doctor Miller expressed himself as enjoying his work, answering questions, best of all his literary endeavors. In addition to his editorial work for this publication, he also conducted a department in Gleanings for many years, as well as contributing frequent articles to such magazines as Youth's Companion and Country Gentleman.

Doctor Miller was the most conspicuous example of success with the small hive. With the general adoption of the 8-frame hive, hundreds of men failed to make a success of honey production, because their brood-chamber was too small to enable the bees to build up to proper strength in time for the harvest. Doctor Miller used two hive bodies for breeding and later, when the honey-flow began, confined the bees to one hive body, thus forcing them at once into the sections. He was remarkably successful as a producer of fine comb honey, and probably secured the largest per colony average for an entire apiary.

When Dr. Miller explained the shortest cut to successful treatment of European foulbrood he rendered an incalculable service. Up to that time there was much uncertainty concerning this disease and the general methods of treatment made matters worse. He met and conquered the disease in a single season, with little available information as to the proper method of treatment. As a student of bee behavior he had few equals.

One thing that he preached constantly was the importance of selection, and breeding only from the best queens. We reproduce herewith a brief exhortation on this point in his own handwriting.

The pictures accompanying this story were taken by the writer at the time of a visit to Marengo, some months previous to his death. The Doctor took special delight in a bed of gladiolas. Always a lover of fruits, flowers and out-door things in general, he took to the breeding of gladiolas in his old age. He had some very fine ones and originated some new varieties which might have become commercially popular had he lived to continue this work. In his earlier life he had devoted much attention to fruit growing. The little farm, just outside Marengo, where he spent most of his life, was at one time largely planted to fruit trees and vines. The approach to his house was lined with a double row of basswood trees, planted for the combined purposes of supplying pasturage for the bees and delighting the tree-loving eyes of the proprietor. In the early days of his beekeeping experience, he was employed by a music company and spent three years in the city of Chicago. Those were years of longing for the country and the bees on the farm at Marengo. He has written briefly of that period of his life and mentioned a bunch of weeds that grew in a vacant lot which were a real pleasure to him. His special delight was a bunch of white clover that grew on Clark street. All his later years at Marengo were much brighter for the three dismal years spent in the heart of a great city.

Doctor Miller spent a long and useful life of nearly ninety years, sixty years of which he was a beekeeper. He will long be remembered by those who live by the labor of the busy bee. We can add nothing to his fame and can but poorly express the measure of appreciation of his labors which beekeepers generally agree is his due.

Already a movement is on foot to erect a permanent monument to his memory. We hope that the subscriptions will be liberal and that something worthy of his name may be done.

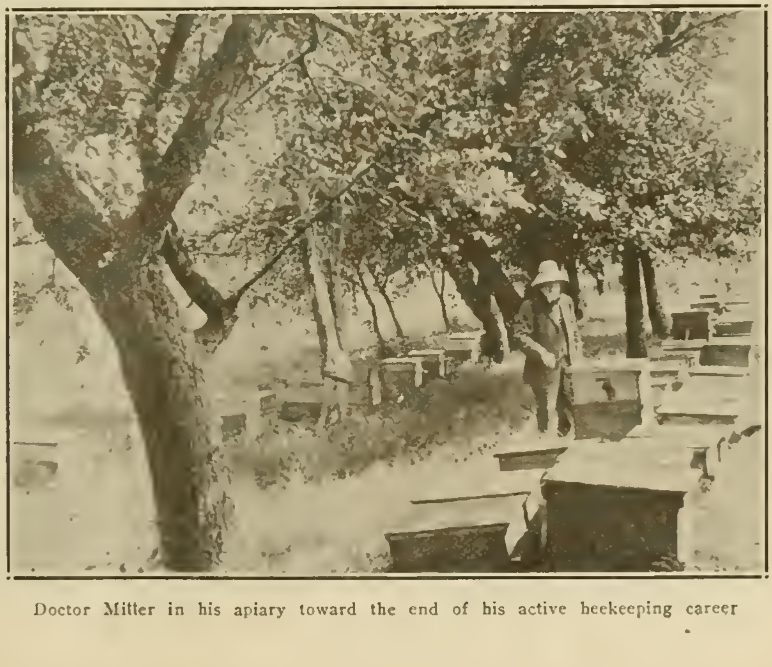
## OUR SIXTIETH ANNIVERSARY

This is the sixtieth anniversary of the founding of the American Bee Journal, the oldest bee magazine in the English language. The first number appeared in January, 1861; an inopportune time for launching a new enterprise. It will be remembered that the Civil War began in that year. Although the Journal continued throughout the year and completed the volume, it was then suspended until after the close of the conflict, resuming publication in July, 1866.

At the close of the first year the following announcement was made:

"With this number (which has been somewhat delayed from unavoidable causes), we conclude the first volume of the American Bee Journal, and now announce that the publication will be suspended for a year, and then resumed if the state of the country will admit, and those interested in bee culture desire it."

The first volume contains many articles of permanent interest. Dzierzon's theory of parthenogenesis was outlined at length and the value of the Italian bee was brought prominently to the attention of the beekeepers on this side of the Atlantic. Samuel Wagner, the editor, had made an unsuccessful effort to import bees from Italy in 1855, and was probably the first to bring them to the attention of American beekeepers. Mr. Wagner, together with Rev. Langstroth, imported some queens in 1859, but the imported stock was lost during the winter. Their first successful attempt was in 1860, when Mr. Wagner and Richard Colvin succeeded in getting some queens from Italy. In the meantime, however, S. B. Parsons had secured a shipment a month earlier, so Mr. Wagner, the first editor and founder of this Journal, was



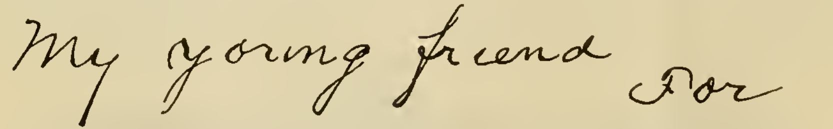
Doctor Miller in his apiary toward the end of his active beekeeping career not the first to import queens from Italy whose progeny survived. The first volume is still in demand by students of beekeeping, who wish authentic information on scientific phases of the subject.

Following the resumption of publication, several beekeepers began to write for the Journal, whose names have since become known the world over. Langstroth was a contributor almost from the time the Journal was started. Henry Alley, Adam Grimm, Moses Quinby, Elisha Gallup and the Baron of Berlepsch, are among those whose names appear frequently in early numbers. A. I. Root's first contributions appeared under the name of "Novice," and continued for some time. His first series, entitled "Experiences of a Novice in Beekeeping," recite the usual diffculties of a beginner in an entertaining way. This series began in March, 1867. His account of securing his first bees by paying a man who stood by, a dollar to catch a passing swarm and hive it in a box, and how he lost it by placing it in the hot sun so that the bees absconded, is typical. Later he describes his first effort at transferring and tells how the robbers carried off the honey of the colony while he did the job. When he paid $20 for an Italian queen he had started on his career in earnest. At the end of the first season, after trying all kinds of experiments with his new hobby, he stated that the season had not been profitable financially, but that if experience was worth anything he had done well. Judging from subsequent events it must have been worth something.

Charles Dadant made his first contribution in November, 1867, and introduced himself as a newcomer from France only four years before. He promised occasional translations of articles from the French "Apiculteur." In January, 1868, he began telling of his early experiences under the title, "How I Became an Apiculturist." An amusing account is given of a pastor at a village near Langres, in France, who was taking the honey from his bees when he was visited by a butcher who was to be married the following day. The butcher refused to take care lest he be stung, when warned by the pastor, saying: "I kill oxen, I need not fear flies"; he hung over the open hives until he was so badly stung that when, on the following day, he called for his bride, she at first refused to recognize him.

As a little boy, Charles Dadant received a colony of bees in a skep from the old pastor already mentioned. He soon had made a leaf hive after the pattern of Huber, and was ready to enter upon his long lifetime of experiment. A flood destroyed a portion of the village and ruined his bees. Later he captured another swarm, at the time of a holiday, when a crowd of boys found a bee-tree and robbed it of its honey. He returned at night with a straw skep and hived the bees, which were clustered on a limb. The bees were placed on a roof of the store-house where he was employed. Since the roof was of metal and very hot, he was hard pressed for something to serve for shade. Customers were waiting and nothing could be found but the cover of the cistern. That night he was awakened by the sound of splashing water and screams, and in terror awakened all the occupants of his boarding-house to see whether any had been drowned. Investigation proved that a big white cat had fallen into the cistern.

From 1868 until his death he continued as a frequent contributor to the American Bee Journal, though it did not come under the editorial management of his son until many years later.



My young friend For
best success, get pure
stock, keep tab on every
pound of honey taken from
each colony, then breed
from the best storers that
are all right in color and
temper.
Cordially yours,
1/31/16. C. C. Miller.

### New Inventions

In these early numbers much space was given to the discussion of patent hives, and many different kinds received attention which have long since been forgotten. There were many bitter discussions regarding the merits of the various types, and Langstroth came in for much serious criticism. The honey plants received much attention already. The white sweet clover or melitotus was so prominently brought to the attention of the beekeepers that they began to scatter seed everywhere, although it was generally regarded as a bad weed, for many years. Borage, chicory and others were recommended for cultivation.

The invention of the extractor, of comb foundation, the development of the pound section and the consequent period of comb-honey production all received due attention in the Journal. A great deal of attention was given to the different races of bees. A number of men made trips abroad to find better bees. Although bees from many countries were introduced and given a trial, interest in all but the Italians gradually died out.

In 1869 there were more than sixty patents recorded on beehives and appliances. This will give an idea of the amount of correspondence in regard to appliances. However, Samuel Wagner was a good editor and most of the communications which found a place in the columns of his publication were of real interest to his readers. It is probably true that the material appearing, during his term as editor, was of greater value than at any similar period of the history of the Journal.

It was in October, 1870, that Dr. C. C. Miller first appeared upon the scene, but his connection with the Journal is reviewed at length elsewhere. Soon after, James Heddon and G. M. Doolittle began to furnish an occasional contribution, and the following year A. J. Cook wrote an article now and then.

In the seventies, several other bee magazines were started, some of which continued publication for several years. All, however, except Gleanings, have long since been suspended. Most of these were started after the death of Samuel Wagner, who died on February 17, 1872. He was nearly seventy-three, so the Bee Journal was a child of his old age. He was very modest, and shrank from anything having the least appearance of personal display. So far did he carry this peculiarity that he could never be prevailed upon to allow his portrait to be taken. L. L. Langstroth wrote an account of his death and paid high tribute to the departed editor. The Journal was conducted for a time by the son, George S. Wagner, although it has the appearance of having been largely edited by Langstroth. It was in June, 1872, that the present editor, C. P. Dadant, made his first contribution to the Journal.

Although the first year of its life the American Bee Journal was published in Philadelphia, it was published in Washington from the time of its resumption, in 1866, until the close of 1872. The January, 1873 number appeared with Chicago as its place of publication, and W. F. Clarke as its editor. Typographical errors are the bane of an editor's life. The dropping of a letter "T" in the heading of an account of the meeting of the German Beekeepers' Association, in the August, 1873, issue, made it read in this astonishing way:

"In what manner can he bees be prevented from making useless excursions in search of honey during the early spring months?"

This led to a column editorial of explanation in the following number and some rather pointed comments on the nature of the "He Bees."

The August, 1874 issue conveys the news that the American Bee Journal has acquired the National Bee Journal mailing list, that the former editor of that magazine, Mrs. Ellen S. Tupper, will be joint editor with W. F. Clarke and that Thomas G. Newman will be business manager. The December issue shows Cedar Rapids, Iowa, as the place of publication. This was a short-lived arrangement, however, for the July, 1875, issue was again sent out from Chicago. How long Clarke's connection with the Journal continued is not clear. The May, 1875 number is the last bearing his name, or that of Mrs. Tupper, as editor. A biographical notice in the July 13, 1881, issue indicates that he sold the Journal to Newman in the December following its purchase in 1873. It is stated that Clarke never owned more than 24 colonies of bees at one time.

At any rate, after several years of silence, Clarke again became a contributor to the Journal under the editorship of Thos. G. Newman.

In the eighties, W. Z. Hutchinson, later the editor of the Beekeeper's Review, became a contributor. In 1884 George W. York began work for Newman as an office assistant. He in turn purchased the Journal and became its editor in 1892. In 1881 the Journal became a weekly, and continued as such until July, 1907. During 1883 and 84, both weekly and monthly editions were published.

In 1912, Mr. York having decided to enter another line of business, the American Bee Journal was purchased by the present owners, Dadant & Sons, and removed to Hamilton, Ill., where it has since been published. The May number of that year was the first under direction of the present editor, C. P. Dadant. It was in the same year that the name of the present junior editor, Frank C. Pellett, first appeared as a contributor to its columns. In October, 1915, Mr. Pellett came to Hamilton and remained until the following March, assisting the editor with the work of the Journal. At that time he became staff correspondent and continued in that capacity until August, 1918, when he removed his family from Atlantic, Iowa, to Hamilton and became associate editor.

Although probably a hundred other bee magazines have sprung up from time to time, the American Bee Journal is the only one in this country devoted exclusively to beekeeping that has survived from the early days. Gleanings was established in 1873, but in addition to bee culture it has a home department and gives some attention to gardening, etc. A number of magazines have attempted to combine interests of fruit, poultry or gardening with beekeeping, but most of these have been short-lived.

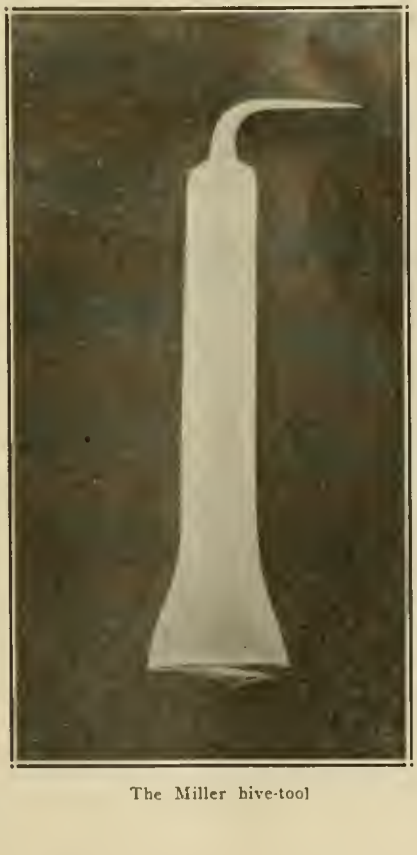
## HIVE TOOLS, AND HIVE TOOLS

By Arthur C. Miller

Hive tools, what are they? Jack knives, screw-drivers, putty knives, chisels, old files, pieces of broken carriage spring, old pokers, in fact, any sort of stiff piece of metal which will serve to pry apart gummed-together hives and frames.

Some beekeepers say they cannot be bothered with a special tool for the purpose, that it is always getting lost or mislaid, that most of them are awkward to carry, or have sharp, scratchy corners, etc. The same is true of substitutes. Look at the notched hives and supers and the broken top-bars, and one may readily guess that something besides a proper implement has been used.

Of the hive tools on the market, some are dinkey little toys, too small to be handled effectively, too thick to push readily between supers, and often brittle and easily snapped, or soft and readily bent. Others are of proper thickness, but from shape or size, present disadvantages in use. Some offer no good surface to push against when forcing them between bodies and supers, and the hive once open, they furnish no means for prying up frames, cleaning out rabbets and getting into sundry corners.



The Miller hive-tool

The tool described below has been years in "growing." In the beginning it had a rather narrow blade at one end and a short and pointed hook at the other. The hook stood at right angles to the plane of the blade and was an unpleasant thing to step on when it chanced to get on the ground. The length of the tool was but 5 or 6 inches. In use it showed something to be desired, and a new one slightly different was made, and from season to season they were altered and made larger. The hook was turned parallel to the blade and the end of the hook was flattened. The width of the hook was changed, lengthened, its edge thinned and, in fact, it took several seasons to develop the hook alone. The curve, the angle of it in relation to the blade, its length, the space between its inner surface and the flat part of the tool, all are the result of conditions met in use, and all have a reason. Today the tool will carry flatly in one's inside coat pocket, or in one's hip pocket.

The wide blade will slip readily between the hive edges without mutilating them, the curved hook furnishes a smooth surface to push against when forcing the blade in, and the inner surface of the curved hook has the corners ground square for scraping either the edges of the hives and supers, or between top-bars or cleaning out rabbets. The width of the blade end is correct to clean tops of frames or hive edges. Sometimes the hook is handier on the edges and sometimes the blade. Held vertically in the fist the wide blade readily scrapes floors, super covers and similar flat surfaces.

Take the picture to your blacksmith and have him make one like it and temper it to good spring temper. Here are the dimensions: Length over all, 8 inches; blade, 1¾ inches wide; hook, 1¾ inches from inside of curve to tip. From the taper of the flat part of tool to inner surface of hook is 1 inch. Hook is three-eighths of an inch wide. Get that curve of the hook, then when the end is slipped under the end of a top bar the curved part of the hook acts as a fulcrum, and will roll smoothly on the adjacent frame.

Have the end of the blade ground to a putty-knife edge and the end of the hook to a thin screw-driver edge. The edges of the main part of the tool are rounded and smooth, so also of the outer part of the hook, but the inner surface of the straight part of the hook is ground flat and square with the sides to give good scraping edges.

What do they cost to make? A few years ago they cost me, all forged, tempered, ground, nickeled and polished, 70 cents apiece. Now they cost $1.50 each. I am particular about the grinding. They are made of Jessop's steel and well tempered. Once in a while one proves too hard and an edge may snap, but unless too large a piece is nicked out, it can be re-forged

Why the nickel? It retards rusting, and is nice to handle and look upon. And such is Miller's hive tool. I have about a dozen made each year and try to keep several in each yard. By carrying the tool in my hip pocket when working about the yard it seldom gets lost, and is always ready for use. But some visitors insist on buying one now and then, so I have to replenish my supply from time to time.

Rhode Island.

## NOTES FROM TEXAS

The past season has been quite favorable for both bees and honey. An open spring put the queens to work early with abundance of pollen to keep things going until the nectar started, when all the colonies were evened up and heavy work commenced. Extracting should have taken place in June, but owing to forced absence from home it was deferred until July, when the supers were filled to their capacity. Seventy pounds average was taken off, and at this writing (Oct 19) there is about the same amount stored. The picture shows stands I am using, which, for convenience and strength, and also durability, cannot be excelled. They measure 2 feet by 4, strong of con struction, easily accessible on both ends, and are supported by four cedar blocks 12 inches high, making them convenient and stout enough to easily hold all the weight two colonies would call for.

WALTER W. DURHAM,

## THE QUESTION OF SUPPLIES

Read at the Illinois State meeting by C. F. Bender.

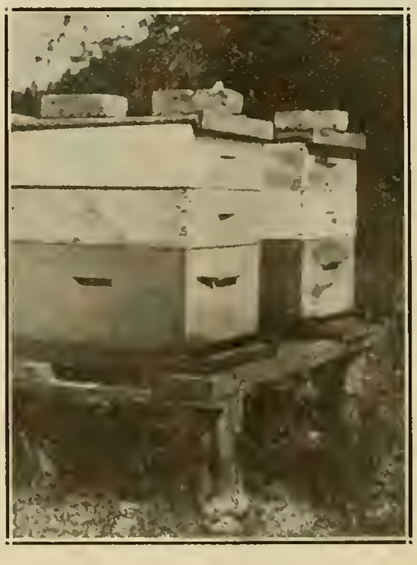
Having been called upon for a paper to be read before this convention, it seemed to me that a full discussion of this subject from the beekeeper's standpoint might be of interest. I wish to assure you at the outset, that I am in no way interested in the sale of bee supplies, but view the matter solely as a purchaser. Having decided upon my own policy with regard to the purchase of supplies for the coming season, it may be useful to give you the facts and fancies on which that decision is based.

I have just returned from a month's vacation in which I visited some of the largest supply factories, making a leisurely visit at each, with a view to learning present conditions, as well as future prospects. I will confess that I went as a missionary to these benighted brethren, saying: Lo, the poor bee man! How is he to pay war prices for his supplies, and take a chance on selling his honey next fall?

I was surprised to find that they were already true believers. They knew all that I had to tell, and much more. Instead of darkly plotting how they were to keep up the prices of supplies, they were anxiously and even prayerfully considering how these prices might be reduced. They told me that the factories must be run through the winter, if the demand next summer is to be supplied; that if they are run through this winter, materials and labor must be purchased at prices that average less than 10 per cent below the highest war prices. Coal and iron, lumber, beeswax, labor, were still selling at astonishing prices. Freight rates on those materials were higher than ever before. Taxes were a burden, interest on borrowed capital unusually high, and in many cases borrowed money was not to be had at any price. Considering all these things, it would be folly to store a large stock of supplies, in the hope of selling them next summer. The only course left was to run the factories short-handed, storing only such a stock as would certainly be sold, at nearly the present level of prices. This in the hope, not of making a large profit, but of avoiding a heavy loss.

It seems to me that our problem, while apparently the same as that of the manufacturers, is really different, because the labor employed is largely our own. Unless we are to abandon our business entirely, it will not profit us to limit the production of honey because our supplies cost us twenty per cent more than they will probably cost us a year later. It will not even pay us to limit increases on account of the high price of hives, because the net profit per colony for one season will more than cover any probable reduction in the price of hives during that year.

If these statements are accepted as facts, there only remains for us one possible question. Shall we buy our supplies now, so far as we can foresee our needs, or shall we wait until spring or summer, in the hope of getting them cheaper? In my mind that question, also, is easily answered. I have tried to show you that the factories and dealers are carrying only small stocks, and that a normal demand during the busy season cannot be supplied. Consequently, if we wait until the last moment, there is danger, not only that we shall be obliged to pay higher prices, but that we shall not get our supplies at all.


Durham's hive-stand

Our only consolations are, that we have used some low-priced supplies in the production of high-priced honey—that, as we have gone up with the commercial balloon, we must come down as it cools off, as other producers are doing, and must content ourselves with reduced profits, hoping for better times in the years to come.

My prediction is that the lowest prices for supplies during the year will be those quoted in the January catalogs. Acting on that belief, I have already ordered my supplies for the next season and expect to do business at the old stand, in quite the usual manner, in 1921.

Illinois.

## QUEEN LAYING ON POLLEN

We have seen this repeatedly and have also seen a supersedure queen-cell, the basis of which is a pollen-cell in which the queen laid. Normal development takes place, and there is no reason to expect otherwise.—Bee World.

## MODERN METHODS IN COMB-HONEY PRODUCTION

By E. S. Miller

In discussing comb-honey production I do not claim to present any original or untried scheme. My desire is merely to outline a method used with success by a considerable number of commercial beemen, a method applicable to commercial outyards within the clover belt.

In the first place, one should begin preparation as early as August of the preceding year, seeing that every colony has ample stores, a good queen and a strong force of bees. At the time of the August manipulation there should be placed above queen excluders upon a sufficient number of colonies, supers filled with brood-combs, provided there is a prospect for a fall flow. These combs, when filled, are to be used for fall and spring feeding. The colonies should be examined again later in the season, after brood-rearing ceases, and all not up to standard in weight should be fed by inserting combs of sealed honey in place of empty combs removed. If there is not likely to be a fall crop, combs of honey from the previous flow should be reserved. If the feeding is done not earlier than three or four weeks after brood-rearing ceases, it will be found that the bees of light weight colonies will have carried the honey in toward the brood-nest and the exchange of outside combs can be effected with very little disturbance.

For the successful production of comb honey, either comb or extracted, good wintering is essential, and good wintering requires not only strong colonies with ample stores, but also ample protection. If one is so unfortunately situated as not to possess a properly constructed cellar, the hives must be thoroughly packed outside and sheltered. It often happens that spring losses are much greater than winter losses. This is especially true if cellar wintered bees are set out in the spring without adequate protection. In order to avoid spring losses, some advise wrapping with tar paper; others advocate the use of hair felt, which can be purchased in sheets about one inch in thickness and cut to any size. In using hair felt, a sheet is slipped in, in place of each outside comb and another pad laid over the top. If metal covers are used, the pad may be placed between the inner and outer covers, and, as the escape of heat from the colony is mostly upward, it is very effective in retaining the warmth of the colony. For want of better protection, several newspapers are sometimes folded and placed between the covers.

Assuming that the colonies come through winter and spring in good condition, a number of them may attempt to swarm with the coming of fruit bloom. To forestall this, place above each colony sufficiently strong, a queen excluder and a hive body. This hive body should contain at the sides two frames of honey kept over from the previous season. The middle frames should contain one or two empty drawn combs and the remainder of this second story filled with frames of full sheets of foundation. Now, why this arrangement? The full combs are to guard against starvation in case of bad weather or shortage of nectar from other causes, for it must be remembered that if the colonies are as strong as they should be, and if there is no other important source of nectar up to the time of the opening of the main flow, the honey of the lower story will practically all be turned into young bees before the clover flow begins, and it is these bees which are of greatest value. Mr. Geo. S. Demuth, in his bulletin on comb-honey production, rightly emphasizes the fact that it is the brood reared within the six weeks preceding the opening of the main honey flow that furnishes the bees which are effective in storing the crop. If bees run short of stores at this time, brood rearing ceases, or slows up just at the time when it should be at its maximum. For this reason, be sure that there is an abundance of food in the hive between fruit bloom and the opening of the clover flow. The use of the one or two middle drawn combs is to induce the bees to begin working above and thus to relieve congestion of the brood-chamber and to prevent consequent swarming.

There are two general methods of procedure which may be used at the opening of the clover season in order to forestall swarming, methods which bring about results corresponding to the two conditions following natural swarming. One of these produces a condition corresponding to that of the parent colony, the other to that of the new colony. In case of natural swarming there is, in the parent colony, no egg laying until a new queen has emerged, mated and begun her duties, a period of about 17 days. In the new colony no brood emerges for three weeks following the issuing of the prime swarm. To bring about the first condition artificially, the queen is removed about the time the main flow begins. Nine or ten days later all queen cells are removed and the colony is requeened with Italian stock or a ripe cell given from the best breeder. It is expedient to use this plan with colonies which need requeening, usually weaker stands, those which have not required the added hive body.

The second method is as follows: Remove the lower story and **all** of the brood, making the second story the new brood-chamber. Find the queen, and after shaking the bees in front of the hive, let her run in. The brood taken away may be used in strengthening weaker colonies or for building up nuclei. Do not make the mistake of leaving one frame of brood, as advocated by some, or any brood at all, as it will often happen that queen-cells will be started and swarming follow. If the above is carefully followed out and the bees are properly shaded, there is no danger whatever of them swarming out or absconding. It is important that there be at least one empty comb available for the queen to begin laying. The six frames of foundation serve to retard storing in the brood-chamber, thus forcing the honey into the comb supers, two of which are added at this time, the first super containing a few bait sections.

It will be observed that the above modes of manipulation insure a maximum number of bees at the time when bees mean more honey, and it cuts off brood-rearing at the time when an increased amount of brood would result in a greater number of consumers, both in the larval stage and as adults, after the flow is over. Of course, it sometimes happens that with a prolonged flow colonies may become somewhat weakened before it is over, but, on the whole, it is preferable to rearing a horde of bees at the wrong time only to consume the crop after it is gathered.

In localities where buckwheat, heartsease, goldenrod or other late summer or fall flowers furnish the main crop, the same modes of manipulation may be followed, the work being done preferably at or about the time the plants begin to yield nectar. The surplus brood will be found useful in building nuclei into full colonies for next year's campaign. At this time it must not be forgotten to place upon the hives a sufficient number of supers containing brood-combs to be filled for next spring's feeding.

Some of the advantages of the methods described may be enumerated as follows:

1. It brings about conditions similar to those of natural swarming.
2. It insures continuous brood-rearing in the springtime, resulting in the maximum number of bees at the right time.
3. It restricts brood-rearing at a time when the brood and bees would become consumers rather than producers.
4. It effectually prevents swarming.
5. It guards against starvation in case of inclement weather.
6. The plan is applicable to commercial outyards.
7. Incidentally, it is an effective mode of treatment for European foulbrood. You can cure the disease and get a crop at the same time.
8. It requires the minimum amount of labor. In the first plan there are two manipulations, first removing the queen, and, secondly, removing cells and requeening. In the second process there is but one operation aside from adding and removing supers.

The methods above outlined are not merely theory. They have been found to work out satisfactorily in practice, and while certain localities may require a modification of details, I believe that the principles are correct and worthy of careful study.

Indiana.

## AN AMERICAN HERO

It appears that Voorhees, son of one of our active beekeepers, Frank Voorhees, of Raritan, Ill., was the discoverer of the method which enabled the American troops to actually "walk over the wire entanglements" during the world war. "He took two ordinary rolls of chicken wire netting, about 40 feet long and wove them together, making a mat of double width. This was rolled up loosely. When they reached the wire entanglements, they would lay one end on the ground and push the roll on before them, over the entanglement. Strange as it may seem, a body of troops could march over any entanglement in this manner with as much ease as they could march through a field of high grass. "Young Voorhees died of disease in France. Keep his memory green.

## A WORD FROM AUSTRALIA

We have a letter from James E. Marshall, of Geelong, Victoria, objecting to some statements made by Tarlton Rayment in our June issue. Rayment (page 199) states: "There is a beekeepers' association, but it is very small and not at all representative of the many progressive apiarists of the State."

Marshall states that in this he is wrong, that the number of members is 200 and that it does contain the majority of the progressive apiarists from all sections of Victoria. He further states that sixty attended the last conference and that in membership and attendance the Victoria Association compares favorably with other States. They publish a very creditable journal, "The Victorian Bee Journal."

### SIXTY-POUND CANS

What is the best way to drain all the honey out of 60-pound cans, so as not to waste any?

Answer: After drawing all the honey you can get out, heat the can a little. This will make the honey so thin that it will run out easily. Then, if you want to get every bit of it out, you can wash the inside of the can with hot water, using same water several times, until it is sweet enough to make vinegar. It will make good vinegar if you add some fruit juice and keep it warm. But you must leave the vessel open so as to allow of fermentation. You can keep flies and insects out by tying some sort of muslin over the mouth of the vessel. It first has an alcoholic fermentation, but soon turns to vinegar.

However, cans that have been washed inside with water must be thoroughly dried, or they will rust. As a rule it does not pay to use them twice for honey. Better cut the top off and use them for water pails, with a handle across the top.

### JOINING THE LEAGUE

How can an individual beekeeper join the American Honey Producers' League?

Answer.—As we understand it, individual beekeepers can join through their home organization, whether local or State. The question was referred to Mr. B. F. Kindig, who has been very efficient in organization work, and he replies as follows:

"This question is mostly answered under Section 2 of Article 2 of the Constitution of the League, which is as follows:

"'Any organization of beekeepers may acquire the right to elect a member of this League by applying therefor to the Secretary of the League and accompanying such application with a sum equal to $1 for each member of such applicant association; provided, that the Executive Committee may reject any application and shall return any sum deposited if such application is rejected. When once affiliated, such organization may continue its affiliation by paying annually to the Secretary of the League a sum equal to $1 for each member then belonging to such affiliating association, and by the further payment of a sum equal to $1 for each member subsequently joining such affiliated association; provided, that the minimum fee for membership from any organization shall be $100, and provided, further, that when a State or provisional organization has affiliated, no other organization from the same State or Province shall be received. The Executive Committee may modify or suspend this section for the year 1920.'

"At the close of the organization meeting in Kansas City the Executive Committee met and modified the above section for the present year so that any organization may join the League by paying the initial fee of $100. This is the condition under which the Michigan Association has joined the League. However, beginning with January 1, 1921, it will cost an organization $1 per member for membership in the League. The matter of joining the League should be taken up by the various State Associations at their first annual meeting, and there it should be decided whether or not they wish to join the League. So far as I know at present, California, Texas, New York and Michigan are the only ones which have taken action to date. The joining of the League will in the case of many States require a readjustment of the membership fee in order that they may be able to pay the required $1 per member.

"The Secretary of the League is H. B. Parks, Box 1048, San Antonio, Texas. All applications for membership should be addressed to him.

"Yours truly,
"B. F. KINDIG,
"State Apiary Inspector."

Section 5 of Article II of the Constitution of the League reads:

"Any person, firm or corporation may, subject to the approval of the Executive Committee, become entitled to the service of the League by paying to the Secretary $10 per year."

As we understand this, the parties thus joining would be entitled to the same service as an affiliated organization.—Editor.

### COLONY OF BEES THAT WOULD NOT ACCEPT A QUEEN

By Eugene Holloway

Will a colony of bees that is hopelessly queenless accept a queen quicker than a colony that has just been dequeened, if the hopeless colony has been queenless two weeks or more? Some people would think they would, and I thought so until I had the experience this year, but I am far from believing that now.

Handy pail made from 60-pound can

This colony swarmed the 7th of June, and nine days later I examined the hive and destroyed the queen-cells, and to my knowledge two virgin queens had emerged; so I destroyed the queen-cells and did not look at it any more for two weeks, but I know it swarmed but once. Two weeks from the time I destroyed the cells I examined the colony and they were hopelessly queenless; so I gave them a comb of young brood and they reared cells and capped them, and I destroyed them and gave them a queen in a mailing cage, and I did not release the queen for 48 hours after I put her in the colony; but they killed her; so I gave this colony four queens, and they killed all of them.

I tried first the mailing cage, then the push-in comb cage, then the honey method, and then I took a laying queen out of a full colony with comb of bees, and put in the hive; but it did not do any good. Then I let them rear a queen, and in due time there were two virgins in the hive, but they disappeared; so I gave them an honorable discharge and united them with another colony.

Oklahoma.

Answer: I have always held, and your experiment confirms my views, that the best time to introduce a queen is when a colony is queenright. Removing one queen and introducing the other immediately is the safest way. Success may be secured by other methods, but this is the surest, aside from introducing the strange queen to hatching bees.—Editor.

### BUILDING UP WEAK COLONIES IN SPRING

The Seastream Plan

We were favored a few days ago by the visit of Mr. Geo. Seastream, of Pawnee, Ill., and were very much interested in his method of building up weak colonies in the spring. Mr. Seastream winters all of his colonies in the cellar, in both 8-frame and 10-frame hives. He usually has a number of them which are not up to normal strength when they come out of winter quarters and, in order to prevent spring dwindling, he uses a modification of the Alexander plan, but goes a step or two further, which yields him excellent results.

When the colonies are taken out of the cellar in the early spring the condition of each is noted and the weaker ones are all placed in one group for attention. No weak colonies are ever taken to outyards.

If the colonies are moderately strong, they are tiered up in pairs, with a queen-excluder between. If very weak, three colonies are placed on top of one another. All colonies must be packed with burlap, or anything that keeps heat and sheds rain.

During the early spring these are fed warm syrup, given to them in an Alexander feeder at the rear of the lower hive. This stimulates brood-rearing to a great extent, and within a short time they begin to gain numbers. As soon as the weather begins to be somewhat settled after fruit bloom, the colonies are placed each on its own stand, side by side. If there is a pair, they are kept in pairs, and if there are three colonies the three, and four kept in fours, are kept close together.

After four or five days the colonies are examined and the weaker one placed on the old stand, thus giving it all of the field bees. Every four or five days the colonies are examined, and if one colony is weaker than the others the weakest one is placed on the old stand, thus giving it all of the old field bees. The entrances to each hive must be as small as possible.

Mr. Seastream says that this gives excellent results. The old field bees, being given to each colony alternately, supply the colony with plenty of fresh stores and pollen; this incites the queens to lay, and they gain very rapidly.

It might be supposed that there would be some fighting among the bees, also that some queens might be lost; but this is not the case. These colonies having been tiered up with queen-excluders between each of them, and then being placed side by side very close to each other, there is no difficulty, whatever, in making an exchange of the field bees in this manner.

The above manipulations require considerable attention, as Mr. Seastream has found that four or five days' interval is as much as should be allowed in making exchanges. The results, however, are wonderful, and the weakest colonies can be built up in time for a good honey crop. The plan has saved him hundreds of dollars' worth of bees ready to go to the field when the honey flow begins.—L. C. D.

## APIARIAN EXHIBIT AT WASHINGTON STATE FAIR

By Geo. W. York

The Washington State Fair was held at Yakima, September 20 to 26, 1920. As usual, the exhibits in the Apiary Department were large and excellent. It is pretty hard to excel Mr. and Mrs. Robert Cissna and Mr. and Mrs. H. L. Hart when it comes to putting up an apiarian display for a fair.

Other exhibitors were J. C. Wallace and Fred Mandery, from near the coast, or "west of the mountains," as that locality is referred to; also Mrs. J. B. Cole and H. Christensen, from the Yakima Valley.

I wish I could do something or say something, that would induce more beekeepers to exhibit products of their apiaries at fairs. I know of no better way to acquaint thousands of people with honey and its uses, and thus induce them to consume more of it. At the Spokane Interstate Fair, Mrs. Arthur Sires gave away hundreds of sample tastes of extracted honey on crackers, and thus helped to advertise honey in a very tangible way. But more of this should be done every year, and there is no better place than at the fairs, where people are always tired and hungry, and will not soon forget the taste of good honey. Of course, at the same time distribute leaflets with honey recipes and information about honey that will be of interest to everybody.

## THE PURPLE MARTIN

By L. E. Webb

I note in the October Journal, under the editor's answers to questions, a question by "Kentucky" as to whether martins destroy bees.

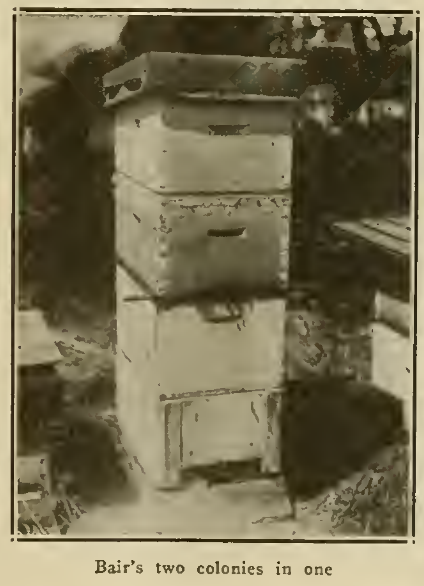
Being a taxidermist and bird fancier and also a beekeeper, I have given the subject close attention for years, having many colonies of bees and large colonies of martins on the same lot.

The martins referred to by "Kentucky" are the "purple martins," which colonize in houses, do not destroy bees, although they feed exclusively on insects.

The name of "Bee Martin" has been applied erroneously to the purple or house martin.

A colony of chattering martins is one of the most beautiful and enjoyable things one can have and when a good house is secured (it must be the right kind, as martins are very particular, and will not build in a house unless it exactly suits their requirements), the colony increases, as year after year they return from their winter home in the tropics and spend the summer in the States.

About the 1st of April the colonies arrive and about July depart as suddenly as they came. Next to bees, the martin is the most interesting thing one can attract They are strictly a social bird and require houses with a large number of rooms, as they prefer to colonize in large numbers, and the most beautiful scenes imaginable are when hundreds of other martins visit the colony and the air is full of beautiful, graceful, chattering birds.



Bair's two colonies in one

With a colony on your place you will have practical freedom from destructive insects.

The U. S. Department of Agriculture issues a bulletin on making martin houses and ready-made houses or plans can be secured from Jacobs Bird House Co., 404 South Washington St., Waynesburg, Pa.

Don't make the mistake of sticking up a box with rooms of just any dimensions, as the martins will not go about it unless it is properly arranged in every respect.

North Carolina.

## TWO COLONIES IN ONE

By Wm. Bair

For intensive beekeeping, the plan I wish to describe seems to have possibilities. Having tried it only on a small scale, my impressions are favorable enough to work it more another season.

The only extra equipment needed is an inner cover bee-escape board with one of the end cleats taken off. I start the plan during the white clover flow by raising brood to the top story, providing there one, two or more full-depth extracting supers on the hive.

"Stagger" the top story to give the bees an entrance at the top. I seldom fail to get queen-cells by this plan, using a queen-excluder between brood-chamber and first super. Just before the virgin queens emerge, put your prepared escape board between the super containing the cells and the lower parts of the hive. There is now no connection between the two as the escape hole must be closed and the removed cleat furnishes them an entrance.

I always leave this entrance at the front, though it could be left at the side or back, which would decrease the danger of the virgin failing to find the right entrance on her return from mating trip.

Both queens are now to be left in their respective places during the season. Of course, if the old queen should swarm there would need to be some special manipulation of the lower colony. The young queen with her colony on top could be left, no matter what plan was used below.

In the fall, when all supers are taken off, simply leave the top colony on the lower with the board in between as before. The two will help keep each other warm during the winter.

Now for the next season. As early as they need the room, give each an extra hive-body, as shown in illustration.

When the honey flow has well started, put the hive-body containing the younger queen and her brood down on the bottom-board, the supers on top of this and the old queen and her brood entirely on top of all. Now kill the old queen and proceed to raise a young queen in same manner as previous season.

This throws the field force of both colonies without any interruption right in the same supers, and if there is any nectar to be had they ought to make some surplus honey.

Each stand of bees is annually requeened without the danger of having them entirely queenless. Should you fail to get a laying queen in the top colony you still have the lower queen on the job.

The removing of the top colony, for manipulating the lower, makes extra work, but a very few pounds more of honey pays for this, and more honey is what we work for anyway.

In the illustration the escape-board cleat is simply sawed in two and the pieces can be slid in or out, making the size entrance desired.

The picture was taken at beginning of clover flow before the change was made.

You will notice there are excluders between each brood-chamber and super; these could be left out, giving each queen the run of two bodies if needed.

Of course, this plan could be used only in the production of extracted honey. In place of letting each stand raise its own queen, a ripe cell, virgin or laying queen could be given just the same when the division is made.

Indiana.

## ANOTHER WOMAN BEEKEEPER

During our visit in the northern part of the south peninsula of Michigan last summer, we paid a visit to a beekeeper's family which was very interesting, but which was not mentioned because we wanted to accompany the statement with a photo. Here it is, at last.

At Pellston, 17 miles from the northern extremity of the State, live the J. D. Robinson family. Mr. Robinson, being manager of the Levering Co-operative Market Association, has but little time to devote to his apiaries. So Mrs. Robinson, a young and attractive worker, does the work in his stead, in spite of having a family to care for, and she acquits herself of it with speed and dexterity. She is shown in the accompanying cut, with a young lady helper, Miss Ruth Hillock, a school teacher, who earns something on the side between school terms, in this way. I accompanied the ladies to two apiaries. The bees were gathering honey freely and we removed just enough honey to give them space for a few days of harvest. It was a delightful experience to be there as a supernumerary, for I have always felt, in our own apiaries, as if nothing was done right unless I did it myself. That is probably why our own people have "laid me on the shelf." Mrs. Dadant and I spent a very pleasant day with the Robinsons, and we feel as well acquainted as if we had known them 20 years.

In the cuts they are shown, preparing the bees for winter.—C. P. D.

## CLIMBING MILKWEED A PEST

In a recent number the climbing milkweed is recommended for honey. It may do to use it where it is already a pest, but anybody who plants it will regret it the rest of his life, as it is impossible to get rid of it when started. The floating seeds are bad about spreading it all over the neighborhood.

The sourwood is fine for honey and also an ornamental tree. The bloom resembles valley lillies. It only grows on sour sandstone soil. It will not thrive on good limestone soil. The buckthorn is just opposite. It may be near the sourwood, but never on the same soil. The many places that I have seen, it is always along the outcrop Kaskaskia limestone, never above or below it. The Chester sandstone or other coal measure sandstone will have plenty of sourwood.

C. F. Very, New Albany, Ind.

## THOSE HONEY PLANTS FROM CHINA

Beekeepers wish to know more about the plants of which we have lately received seeds from China, and which were offered free for trial in the December number. Mr. Golding, our correspondent in China, writes about them as follows:

"The broad bean is in flower from the third week in March to the beginning of May, and a lot of nectar is obtained from this source, but the surplus comes from rapeseed, which is abundantly grown in this neighborhood. Unfortunately, the flow from rapeseed is not of long duration, about three weeks altogether, from the middle of April to the first week in May. Rape yields an immense amount of nectar throughout the day, for bees work upon it from dawn to dark."

It should be remembered that our correspondent is located in a region similar to our Gulf States, so the season will be later in our Northern States.

Von Mueller, in his work on "Select Extra-Tropical Plants," states that the broad bean will bear seeds still in latitude 67 degrees. He mentions it as a source of nectar, as a table vegetable and as a particularly valuable fattening food for live stock. The seeds are large and contain about 30 per cent of starch. They are said to retain their vitality for six years or more.

He describes the rapeseed as valuable in a rotation of crops and states that an acre sown on sandy land in Victoria sustained twenty sheep during the fall and early winter and was available for other crops the following year.

It is the plants which are valuable for agricultural purposes as well as for nectar secretion which promise to be worthy the attention of the beekeeper. Such plants he can well endeavor to introduce into his neighborhood.

Our supply of seeds was almost immediately exhausted.

## MARKETS AND PRICES ON HONEY

By Wesley Foster

The beekeepers of the western half of the United States have marketed but a small proportion of their extracted honey. The great bulk of them are very much dissatisfied with the present market situation. A large number of districts of the West had poor crops this year, and as a consequence the income of the producers has been very materially cut down by the short crop and the difficulty of marketing at a profitable price. However, the writer feels that a great many producers are complaining where they have little cause. The writer is interested in some 4,000 colonies of bees operated in Colorado, and the past season was a very unsatisfactory one, so far as crop conditions go, the average yield being something like 25 pounds of extracted honey per colony. On this basis, a price of 16 to 18 cents for the extracted honey, which was secured for the entire crop, as this honey was sold as soon as extracted, the return from the business was something like $1 per colony less

Mrs. J. D. Robinson and Miss Ruth Hillock, at Pellston, Michigan, preparing the bees for winter in quadruple cases than the cost of production. Half of these colonies were operated with hired help, high wages being paid. If the crop had been 60 pounds of extracted honey per colony an income of 20 per cent of the investment would have been secured, and the honey could have been sold at 12 cents per pound.

There were some districts in the Rocky Mountains where average crops of more than 120 pounds per colony were secured, and the beekeepers who have received between 100 and 200 pounds of extracted honey per colony, if their system of operation is economical, should very easily make good money and sell honey at 10 cents per pound, even under present high-priced supplies. The writer certainly would be glad to contract his entire crop at 10 cents per pound with present supply prices, if he could be assured of 100 pounds per colony or better.

However, it is not that the writer should like to see lower prices on honey, but it seems that lowering prices is the only way the beekeepers have at present for stimulating consumption. If the beekeepers would borrow 7 cents per pound on the crop in the warehouse and put the whole amount into advertising, and this be done on a national scale, so the entire crop of honey could be moved, they would doubtless receive as much for their honey as they will by waiting for the market to absorb it at a low price. The public will buy honey and will pay 30 to 60 cents per pound for it and will feel that they are getting good value, if we can only bring it to their attention. The case of peanut butter is one that I have referred to a number of times, and I believe it is a good comparison. As you know, peanut butter did not meet with public approval until but a few years ago, but now there are thousands of tons of peanut butter consumed in the United States and the consumption is growing daily. If we can work with honey along the same line, as I believe we shall, in another ten or twenty years honey will be a food on almost every table.

The outlook this winter and until the 1921 crop is off the hive, does not look any too encouraging, especially when looked at from the individual beekeeper's viewpoint; but if he could look over the country and see the cars moving steadily to market and see that this honey is actually being consumed, he would feel better. Honey is moving at a quite considerable rate of speed, and before the new crop is harvested most of the old honey will be consumed. There are a number of disturbing factors that should be noticed by the beekeepers, one of the principal ones being the importing of honey from foreign countries. This is coming in large quantities from South America, Cuba, the West Indies, Mexico, New Zealand and other countries.

Some legislation to protect the American honey industry is necessary, and I believe there will be in the near future. One of the most unfortunate features in building up the honey industry is the lack of profit there is in it for the honey bottlers. The profit is so small that the honey packer and bottler cannot afford to spend the money in advertising, demonstrating and general publicity that should be spent. The reason that the publicity so far attempted has not been more profitable is that the hundreds and thousands of local beekeepers do not take into account the necessity for the packer making a profit, and sell honey at the same price that they expect to sell to the carlot buyer. The wholesale buyer or packer of honey has no protection whatever from the producer going right by him and selling to the parties he sells to and who spend no money pushing honey and who handle it only occasionally. They do not look ahead over ten or twenty years to see what the honey business can be made in that territory. What we want are not honey dealers, but trade builders, and we cannot get honey trade builders in any other way than by raising them up from among the beekeepers or in firms that are now very closely allied with beekeepers.

A great many of the beekeepers and writers in the bee journals are finding too much fault with the honey buyer, whether he be large or small, for the profit he is making. A point comes to mind: A peddler buys honey of the producer, we will say at 15 cents per pound, and goes from house to house retailing it at 25 cents per pound. The beekeeper would naturally suppose that this is too large a profit, but when the work necessary is taken into account and the fact that the honey peddler is doing a missionary work in encouraging the use of honey, his profit is not a bit too large. The writer has known of men who have made from $20 to $30 per day selling honey. The average for a whole year, of course, would be cut down very materially, and we beekeepers should not begrudge the high wages, even up to $50 per day that a peddler would make selling our honey when our own time in the bee-yards is worth fully as much during the summer season. We are entirely too prone to deny the other fellow a chance to make a good thing at his business and we ought to be good sports and glad that from the honey dealer down to the peddler who sells our products, a good profit is made. I have heard beekeepers make the statement that honey dealers were robbers. I have also encountered a wholesale groceryman who accused the writer of paying the beekeeper too much for his honey, stating that it was not good for the beekeeper to receive such a high price. He had the idea that the producer should be paid as small an amount as possible, and seemed to think that the lowest price was all that the producer deserved. These ideas on the part of both the dealer and the producer are entirely wrong, and I am glad to say that they are not encountered very often. The average dealer is glad to know of the prosperity of the beekeeper and in fact I have heard many of them speak in glowing terms of some of the producers whose honey they handle, and tell exultingly of the large checks they had paid these men for their product. This is certainly the proper spirit, and I would like to see more of this among the beekeepers of the country, although I have heard very few beekeepers show any appreciation if a honey bottler has had a prosperous year.

We must realize that American ideals stand for individual opportunity and a chance for everyone to obtain the reward for initiative and enterprise. We must not limit enterprise, for wherever this is done, our liberties are in danger.

There is one consolation in seeing the dealer make good profits, for they are, nine times out of ten, re-invested in the business, and it is enlarged for greater facilities for handling our products. Honey marketing in the United States would be better at the present time if twenty or thirty honey packers had been able to accumulate fortunes of $100,000 to $1,000,000, as this money would be reinvested in the business. It may be hard for some beekeepers to see this, but if this money is not forthcoming from the business men for investment in honey distribution the beekeepers will have to put up this money themselves.

November Bee Journal report, on page 395: In the first paragraph regarding crop selling the statement is made that all reports indicate that honey is moving very fast east of the Missouri River and north of the Ohio. The writer knows of a number of carloads in Chicago and Toledo, Ohio, that have been carried over from last season, and the sale of this honey has been exceedingly slow. Of two or three carloads in Chicago, less than one-half a car was sold during the past six months. The sale in the small country districts has doubtless been very satisfactory, but the demand in this territory for honey in bulk has been exceedingly slow and the market is not in a satisfactory condition.

Colorado.

## LOOSE-HANGING OR HOFFMAN FRAMES, WHICH?

By C. P. Dadant

"I see in the 'Dadant System of Beekeeping' that you use loose-hanging frames. Since you practice more or less nomadic beekeeping, how do you manage to keep the combs in place? Also tell us what advantages there are to each kind, the loose-hanging and the Hoffman self-spacing frames."

California.

Answer.—I will begin by saying that, by the advice of several people, the standard Modified Dadant hive is made with Hoffman self-spacing frames. So we have both kinds, and I now propose to give the weak points and good points of each style, from my viewpoint.

First let me say that neither I nor any one else has any interest whatever in supporting the Dadant hive, outside of the idea of progress. Those who read of the Dadant hives being used as far away as Russia, Siberia, Argentine, Morocco, perhaps think that some Dadant agent has been selling hives in those countries, to the profit of the Dadants. Not by any means. Not a single Dadant hive has been sold or even offered in any country, outside of the United States, at any time, and the only hives which we have ever shipped across were those donated to the Franco-Belgian fund and half a dozen pattern hives sent in 1920, to Ancona, Italy. Other companies, who sell bee supplies all over the world, can testify to the truth of this. Their goods, and not Dadant's, except foundation, have been sold in far-away countries. The Dadant hive was never patented and has been adopted through the reading of the Langstroth-Dadant book, and in no other way.

Now to the loose-hanging frame question. In the sixties of the past century, the senior Dadant used Debeauvoys frames with self-spacing by having a wide 1½ inch top-bar, with openings in it to permit the bees to go into the sections. Then we tried side-spacing and did not like it any better. Every one of those edges of side-spacing frames was whittled off by me at some time or other during my early experience, in order to get rid of the feature. The objections were as follows:

1. Whenever we opened a hive in which the frames were heavily coated with propolis, it was necessary to use a chisel to pry the frames apart.

2. When we pushed the frames back together, we always caught some bees between the joints.

3. As we did not then use comb-foundation (it was not yet invented), it was impossible to change frames around or exchange them from one hive to another; as the least projecting or bulging of a wavy comb would cause it to come in contact with the opposite one, and we could not, as with the loose-hanging frames, set them a little farther apart, in case of necessity.

4. In extracting honey out of self-spacing frames, the projection was in the way. It was still worse, if the projection was a nail instead of a wooden shoulder, for in that case the honey knife would jam more or less against it and be dulled.

5. If, through some accident or inadvertance, some frames were allowed to stay in the hive without being closely pressed against each other, the bees always filled those interstices with propolis. Huber, in his unedited letters, called attention to the great celerity with which, in time of honey shortage, the bees would fill every crack or crevice with propolis, both to protect their combs against enemies and against the danger of their breaking down. Wherever propolis is plentiful, and it is plentiful in Hancock County, they fill with it all the spaces through which they cannot pass. Frames having propolis along their projection had to be scraped in order to make them fit in the hive.

6. Without the use of a movable division-board or dummy, it is next to impossible to remove the first frame from a hive in which the bees have been over a year, if the combs are propolized as we are accustomed to find them. While the loose-hanging frame, they may be readily moved, each a little, until there is room to remove one.

I am quite willing to admit that, with the present comfortable use of comb-foundation, which secures very straight combs, some of the above disadvantages are eliminated. There are also some advantages to the Hoffman self-spacing frames which cannot be denied. They are as follows:

1. The frames are held in place, so that they may not move sideways. When the hive is new and the combs not yet glued, this feature enables us to transport the bees easily without any other fastening. When moving loose-hanging-frame hives, it is sometimes necessary to fasten the frames with a rack at the top. We have never found it necessary in our nomadic beekeeping, moving bees on trucks a distance of 20 to 30 miles. The propolis holds them sufficiently.

2. It is possible to handle colonies with greater speed, because you may handle 3, 4 or even 5 frames fastened together by propolis as quickly as you handle one. When I visited the Wilder apiaries in the hands of W. B. Bradley, in southern Georgia, in 1918, I admired the speed with which he handled half a dozen combs to reach the cluster in the center of the hive. With the loose-hanging frame, we have to use a different method and "spread the frames" to get to the center one.

3. If you employ "green help" there is no danger of their making mistakes and putting 9 or 11 frames in a hive that should contain 10. That is why the Modified Dadant hive has been made with Hoffman self-spacing frames. And, by the way, let me say that Mr. Julius Hoffman, who invented them, was a very practical man and had great regard for Charles Dadant. I have before my eyes a postal card from him to Charles Dadant dated January 11, 1879, in which the following words occur:

"I take the liberty of assuring you of my highest esteem, as I think you have done as much or more than any other man to benefit the bee business in this country."

## HONEY CHANGING QUALITY

In the November number, page 376, inquiry is made about honey turning to syrup in tin pails. Around here it is universally said that if a tin pail is washed out with soapy water, the next contents will spoil, even if the pail is rinsed afterwards. I don't know just why this is, but it is confirmed by people of experience, and also that the pails should not be used for syrup or honey more than twice. I have heard of people selling honey in pails who would allow for the return of the pail, provided it was returned unwashed. Perhaps the thing can be solved by noting the chemical action of soap on tin.

Tym C Reynolds.

## THE CAUSE OF ISLE-OF-WIGHT BEE DISEASE

### Important Results by Investigators at Aberdeen

For some years past an investigation has been conducted by Dr. John Rennie and his collaborators, Miss Harvey and Mr. Bruce White, under a special Joint Committee of the University and the College of Agriculture at Aberdeen, on the cause of Isle-of-Wight bee disease. The funds necessary to finance the investigation have been provided equally by A. H. E. Wood, of Glassel, Aberdeenshire, and the Development Commissioners. At a meeting of the Royal Society of Edinburgh held on the 1st of November, a series of papers illustrated by micro-photograph lantern slides was read describing the work of the investigation, and making the important announcement that an organism had been discovered which the investigators considered had been proved to be the causal agent in this disease. The authors stated that this disease had been known in bees in this country since 1904, at least, and it was still highly prevalent throughout the United Kingdom. Since 1907 investigations have been going on in England, and for a shorter period in Scotland. Eight years ago certain English workers claimed that the causal organism was protozoan, named **Nosema apis.** It was due to Mr. J. Anderson, of Aberdeen, to state that he was the first to call in question this hypothesis, and more recent work from the Parasitology Laboratory at Aberdeen, under the joint committee above referred to had shown Nosema apis to be a harmful parasite to bees, but not causally related to "Isle-of-Wight" disease. This disease had, up till now, remained an unsolved problem. At the meeting of the Royal Society of Edinburgh, the papers read by the Aberdeen Bee Research staff revealed the existence of a hitherto unknown type of parasitism in bees of a remarkable kind. In Isle-of-Wight disease the respiratory system of the bee was invaded by an extremely small mite. It belonged to a genus known as Tarsonemus. This creature, which was specialized in structure, was bred within the bee and was confined to an extremely limited but very important region of its breathing system. Within a space of a few cubic millimetres, scores of these creatures might be found in all stages of development, sometimes packed in dense columns so as effectively to cut off the air supply from the surrounding organs. The detailed pathology described in Mr. White's paper proved the destructive character of the parasite's habits. Thousands of bees had been examined from large numbers of stocks throughout the country and it had been found that every stock reported by reliable beekeepers or certified by the investigators themselves as suffering from the disease, harbored this parasite. Similarly, every individual bee, known from its stock history and individual symptoms to be suffering from this disease, was likewise found to contain these parasites and to exhibit the internal disorders which caused the disabling symptoms. The investigators stated that they were now able to diagnose the disease in its earliest stages, while the bees were capable of flying and foraging. Infection appeared to occur mainly in the hive, the conditions of the cluster making this comparatively easy. Mites had been obtained from the outside of the bee, apparently on their migratory passage. The tarsonemes included several species destructive to plants and there were some which have been found in malignant growths in man and in animals. The bee tarsoneme, in its structure, appeared to be more closely allied to these last.

Many bees from different countries outside Great Britain had been examined, and so far Tarsonemus had not been found in these. All the evidence hitherto obtained points to the parasite in bees being peculiar to this country. This coincides with the general testimony regarding the insular character of "Isle-of-Wight" disease. The name of Isle-of-Wight disease had long been regarded as unsatisfactory, and it appeared that "Acarine" disease would be more appropriate.

In view of the great practical interest shown by Mr. Wood, of Glassel, in the work of the research and of beekeeping generally, the director of the research proposed to designate the new species "Tarsonemus woodi." The investigators recorded their very high appreciation of the support of beekeepers throughout the country in supplying bees, and for other assistance so essential for the successful conduct of the research.

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## FROM THE FIRST ISSUE OF THE AMERICAN BEE JOURNAL, JANUARY, 1861.

### A Bee Master

He may be regarded as a master in bee culture, who knows how to winter his stocks in a healthy condition, with least loss of bees, the smallest consumption of stores, and with the combs unsoiled.

### Money From Bees

There are three German adages which run thus:

I

Bees, sheep and angle-rod, be sure,
Will make thee quickly rich or poor!

2

Sheep, doves and bees (nought surer),
Will make thee neither richer nor
poorer.

3

Keep plenty of bees and sheep
Then cosily lie down and sleep!

In the Kingdom of Bavaria, over 200,000 hives of bees are kept, according to the official returns made to the Government; and these, it is stated, yield an average profit of 75 per cent on the investment. In view of this result, a late German writer thinks there is rather more of truth in the last of these adages than in the first two.

### A Cure For Robbing

When robbing bees attack a weak colony having a fertile queen, it is advisable to remove it from its stand to a dark chamber or cellar. Set an empty hive in its place, strew therein a handful or two of the stems and leaves of wormwood, and rub the front of the hive and bottom-board therewith. The assailants will soon forsake the spot, and the colony may be replaced on its stand on the evening of the following day.

### January

Not unfrequently the queen begins to lay eggs already in January, though this is by no means a desirable occurrence, resulting commonly in detriment to the colony and damage to its owner.

Besides a sufficiency of stores, adequate warmth is indispensable for the wintering of bees.

If a warm day tempts the bees to fly when the ground is covered with snow, a quantity of loose straw should be scattered on it in front of the hives to keep the bees from being blinded by the glare, and aid them in returning to their homes.

### An Aid to Prosperity

An extensive traveler, Mr. Keppelhoff, remarks: "On close observation everywhere among the peasantry of the countries I have visited, I uniformly found that small cottagers who kept bees, were in the enjoyment of a greater amount of the comforts and conveniences of domestic life than those who paid no attention to the industrious insect."

# BEEKEEPERS BY THE WAY

### A Beekeeping Entomologist

Professor H. F. Wilson was an entomologist a long time before he became a beekeeper. If he had been a beekeeper first, the chances are that he never would have been an entomologist, for since he took the bee fever the bugs have suffered from neglect. It is not clear as to just when Wilson first became interested in bees. Several years ago, while stationed at the Oregon Agricultural College, he issued a bulletin on elementary beekeeping.

When he became head of the Department of Entomology at the Wisconsin University his beekeeping propensity first found opportunity for unlimited development. Beekeeping is an important industry in Wisconsin and the Department of Entomology is an equally important branch of the University. There are some live beemen in Wisconsin, and when a live bunch of beekeepers find their university ready to co-operate with them, things begin to happen. Things have been happening in Wisconsin for some time past. For two years they have held a beekeepers' chautauqua at the side of a lake in Madison, after the close of the main honey flow in August. The beekeepers have camped out and cooked their meals from the university garden, which Wilson took care to have planted for them. There have been big crowds and good times and hard study as well.

Wisconsin has one of the most complete organizations of beekeepers of any of the States. In addition to a strong central organization, most of the counties where beekeeping is important have branch associations which are wide awake. Wilson is Secretary of the State organization. The university, in co-operation with these local organizations, has held three-days bee schools in all parts of Wisconsin. Keep your eye on the Badger State.

H. F. Wilson, of Wisconsin

## THE HONEY-MAKING WASPS

By Frank C. Pellett

In the July number was an account of the shipment of a colony of honey-making wasps from Rio Hondo, Tex,, to Hamilton, by C. S. Engle. A picture of the big nest inside the cage in which it came was shown at that time. The insects were a source of great curiosity to the people of Hamilton upon their arrival, and caused many interesting comments.

The cage was opened and the nest hung beside the dining-room window, where the activities of the insects could be readily observed. For a time they worked away with apparent content. I was beginning to congratulate myself upon my unusual opportunity of watching the insects at close range, when they suddenly swarmed out and deserted the nest. No one saw them go and we could find no trace of them. When heavy frosts came in October and brought down the leaves a new nest was found in a small black locust tree only about a block distant from the site of their old nest by the window. The new nest had been made in a small tree, one of a thick clump. As the nest grew in size the weight became too much for the little tree, and it bent down until the nest rested upon the ground. It was nearly as large as the original, and was occupied by a very numerous population of insects much resembling our native yellow jackets.

Since these insects are native to a tropical country and can stand very little frost, the nest was removed to the cellar, where it is hoped that they will pass the winter safely. There was no way to open the nest to ascertain whether or not they have a sufficient supply of honey to carry them through. It is extremely doubtful whether insects of this kind, native to a tropical country, where they have opportunity to gather nectar every month in the year, will survive the long months of confinement in an Illinois cellar.

Although there were only a few weeks of time when the nest and its occupants were under observation, a number of interesting facts were observed. When the foragers returned from the field with a load of nectar, they would pass from one worker to another on the outside of the nest and divide the spoil. The drop of nectar could be very plainly seen as it was offered, and each recipient took but little. From three to a dozen individuals would take a portion before the forager would disappear within the nest.

### Peculiarities of the Insects

The nectarina seem to form a link connecting the bees with the wasps. They have a number of characteristics which apply to bees, and others that are distinctly wasplike. Their nests are made of paper like the wasps and greatly resemble those made by the yellow jackets and baldfaced hornets. These native wasps, however, feed their young on animal food, while the nectarina store honey in the cells as do the honeybees. I did not observe them bringing in any pollen, and apparently the only pollen brought in is such as is contained in the drops of nectar. There are several species of these honey-making wasps common from Mexico south to Brazil. I can find no record of their occurrence within the United States, but from my correspondence with beekeepers and my visits to that region, I know them to be quite common in the extreme lower region of the Rio Grande Valley. As nearly as I can ascertain, they only occur a few miles north of Brownsville, and nowhere else within the limits of our country. I have never found any of our native wasps which lose their stings as do the honeybees. When the nectarina sting, they lose their stings in the same manner. I was much astonished at this the first time one stung me, and I deliberately repeated the experience several times to make sure that it was the normal thing for them to do.

Although they store a considerable amount of honey in their paper combs, they do not cap it over as do the honeybees. Another resemblance to the honeybee is the fact that they are reported to swarm in much the same manner. I found this colony to be quite gentle and to show very little resentment when I examined the nest. When one does sting, it is very painful.

Failing to find anything concerning these insects in any of the publications on natural history in this country, I appealed to friends in Washington to see whether anything was available elsewhere. Through the kindness of Doctor Phillips, I have secured a translation of an account of a French naturalist which was published by the Entomological Society of France many years ago. He described several species and devoted considerable attention to **Nectarina lecheguana,** the species under consideration. He stated that about one-sixth of the population of a nest sent him from Brazil consisted of large females having in the oviduct eggs ready to be laid. I have not been able, as yet, to distinguish any of the insects as queens. Du Buyssen, the naturalist quoted, is of the opinion that larvæ are fed on delicate insect larvæ in addition to the nectar. If he is correct, we find here the food habit resembling both bees and wasps. In the regions where the nectarina are common they are said to be smoked out of their homes in December and left to start anew while the nest and honey are taken away. I learned from the beekeepers about Brownsville that the nests are much sought for by the Mexicans who live in the vicinity, and we read that they are often sold in Mexico for the honey which they contain. There are cases recorded where the cowboys have become intoxicated from eating honey from these nests, which was gathered from daturas.

These insects are principally an object of curiosity to us and could hardly become of commercial interest. Pictures showing the original nest in which they were received and also the new nest which they afterwards built are shown. Should they survive the winter, perhaps other facts of interest may later be discovered.

Nest of honey-making wasps hung beside the window

## THE HONEYBEE IN RUSSIA

(Concluded)

Let us now see what resources Russia offers to the bees. This immense country, whose climate varies gradually from cold to hot regions, comprises in its vast extent enough irregularities to produce a great diversity of different plants.

The flora may be divided into zones, that of the low plains temporarily overflowed; that of the marshes, half forest and half prairies; that of the high plains upon which water never stands, and lastly that of forests proper, which cover immense territories and which, according to local conditions, have a varied and special flora. There is also the separate flora of cultivated fields, parks and gardens.

Traveling from one place to another, one finds first, near the water, the numerous willows already mentioned, which, besides furnishing the first pollen, also close the season sometimes with a heavy honeydew so abundant that it fairly runs from the leaves. This honeydew is not to be found everywhere, but only on those willows bordering a stream that dries up during the hot weather. This honeydew is also produced on the leaves of basswood, which thus, also, gives two crops.

In the marshy lands, we find the magnificent angelica (**Archangelica officinalis**). On its large umbels with numerous flowers, we see the big golden "cetonia" looking for all the world like a brooch on a cambric collar. Near it, the large butterfly, **Parnassus apollo,** whose white wings bear a red "eye" and appear to be on guard. Between them, the honeybee alights and rapidly gathers the honey.

But as the prairie becomes drier, the bees find pleasure in gathering honey from valerian, epilobium and scabious. Soon after, they will find the vipers' bugloss (**Echium vulgare**), whose high-plumed tops draw them. Then comes the sage (**Salvia pratensis**), whose honey is of an odor recognized at some distance. The steppes of the southern regions have several varieties of labiates, growing in virgin soils and making up for the lack of forest bloom. Basswood is one of the boons of Russia and, with the birch, serves many purposes in the life of the peasants. Before the advent of tea, the blossom of basswood was used in a similar way. In many places it is still used as tea, and during the past few years many people have come back to its use, since the tea of China has not been available, under the rule of Lenine. Moreover, this blossom also furnishes the sweetening, through its honey. Metheglin, which took the place of alcoholic drinks, was usually prepared by the head of the family and was served in special vessels, made of sculptured wood. Basswood, which is easily worked, is used in the manufacture of much of the woodenware—spoons, spatulas, dishes, tubs, furniture, as well as to make kegs, from trunks hollowed out, in which honey keeps very well. When honey is sold it is always weighed with its container, which, being of basswood, is very light. After being emptied, these little kegs are very useful in the household. Basswood is also used in the manufacture of "laptis" or sandals, made of basswood bark, braided, and worn by most peasants. In these later times, since leather has attained unapproachable prices, it was not unusual to see city people wearing "laptis," while the bolchevik masters were still wearing leather shoes.

From the bast, or bass, inner bark of the basswood, they manufacture ropes, rugs, sacks, mats and mattresses, and even backs for the seats of sleighs, etc. It seems as if life could not be possible, in certain parts of Russia, without those two trees—basswood and birch. The latter is used to build houses, to make wagons, tools, plows, etc. It is the brother of the basswood and one of the gifts of Nature to facilitate man's existence.

Among the honey plants, we must also notice the white sweet clover, the odor of the bloom of which perfumes the air at the beginning of a sunny day. We find it everywhere, and it is easily seen, around the houses, the fields, in the pastures and the forest. The bees love those leguminous plants, and the housekeepers themselves gather bunches of them, when in bloom, dry them and put them in the clothes-press to give a sweet smell to the linen.

Among the cultivated plants, I have already mentioned rape and buckwheat. The latter furnishes not only the meal of which they manufacture "blennies," or pancakes, at the end of Lent and during the Carnival, but also a breakfast food, mixed with millet in the preparation of the "Cacha," which is found daily in every household, even in the cities, for the food of the children and of the servants. How many people return to the country dishes of their young days! I have seen rich, wealthy, society ladies, but especially children, after dining at a richly-served table, turn clandestinely to the kitchen cupboard to tip out a wooden spoonful from the dish of "Cacha."

In all the landed estates, there are always large flower and vegetable gardens, orchards, etc. About these, one often sees a number of avenues of cytisus, an ornamental free-flowering shrub, whose yellow blossoms are much esteemed by the bees. As they are very plentiful, they form an appreciable resource for the apiary.

As the Russians are very fond of sweets, it is necessary for the housekeepers to secure the numerous small fruits of which preserves are made, such as currants, raspberries and strawberries. The raspberry flowers are considered as very good honey producers and I have seen large fields of them intended especially for

New nest which the wasps made after deserting the old one in which they were shipped from Texas the good of the apiary, but also useful in their fruits.

The fruit trees also give honey, but their bloom is of very short duration. We see that Nature has marked a role for the bees in the fertilization of plants, and they are drawn to them at the proper time by the odor of their nectar glands.

It is to be regretted that the apiaries, which suffered a great deal at first by the seizure of the domains by the peasants, should have again suffered when the bolchevik soldiers, during the civil war, in their turn, also pillaged the hives, not in the way of beekeeping, but in the way of thieves and robbers, thus destroying many apiaries which constituted a part of the wealth of the country. I trust that our own country may be preserved from such a calamity.

Ph. JEANNERET.

(Bulletin de la Societe Romande, Switzerland).

## A CAPABLE BEEKEEPER

By T. C. Johnson

While inspecting bees I have met many fine beekeepers, and I always find good beekeepers fine people to deal with, let them be either men or women. It seems to depend a great deal more on the beekeeper than the locality whether the business is successful. I wish to mention F. W. Luebeck, of Knox, Stark County, Indiana, whom I had the pleasure of meeting for the first time three years ago. I feel sure that Mr. Luebeck is a wonder. He gets more honey with less work than any other man in Indiana. Mr. Luebeck came from Germany in his young days, lived in Chicago 20 years and then went to Canada. From there he went to Alaska, crossing Alaska in a self-built boat. He traveled by boat in summer and dog team in winter. He returned to Chicago in 1902, but city life did not appeal to him, so in 1902 he came to Stark County, Indiana, and settled on a small, sandy farm about 7 miles northeast of Knox, and started beekeeping with 9 colonies the first year. The following winter he built 50 hives and bought all the bees he could find from farmers, in all sorts of hives. At present he has 300. He has a Ford 1-ton truck and moves his bees, or a part of them, 29 miles twice a year, so as to get two crops of honey, and he sure gets it. He uses the standard 10-frame body with shallow extracting super on top, and runs entirely for extracted honey. As strange as it may seem to good beekeepers, he never takes out any frames to look through any colony unless he sees they are not up to standard. He claims he has colonies that he has not had a frame out of in 3 years. It is not everybody that can get by like that, but he has all movable frames and a very fine outfit. He's a real mechanic, having made his own 8-frame extractor, and all his honey tanks. One holds 3,500 pounds and he purchases honey enough to fill it several times every season. He has a fine home that he has built himself and finished inside. He has made all this from his bees, his only business. In all my travels in Indiana I have never seen supers piled so high, or all colonies so full of bees and honey from top to bottom. I could not look in the top without something to climb up on. He has a crop of 45,000 pounds or better this year from 300 colonies, while some of his neighbors got scarcely anything.

Indiana.

## DIRECTORY OF BEEKEEPING OFFICIALS

An attempt has been made to secure the names of all those engaged in teaching, inspection or extension work in beekeeping, and also secretaries of beekeepers' associations. Every State Department of Agriculture and College of Agriculture has been asked to supply the names of those connected with its staff. Since it has been found to be impossible to get the names of all the secretaries of county and local beekeepers' associations, these are not included. This list was compiled in November, and several changes have taken place since that time.

U. S. DEPARTMENT OF AGRICULTURE—

Bureau of Entomology, office of Bee Culture.

Dr. E. F. Phillips, Apiculturist in charge.

Mr. George S. Demuth, Apicultural Assistant.

Mr. Lloyd R. Watson, Assistant Apiculturist.

Mr. Arnold P. Sturtevant, Specialist in Bacteriology of Bee Diseases.

Mr. G. H. Cale, Apiculturist in Extension Work.

BACTERIOLOGY—

Dr. G. F. White, Investigations in Bee Diseases.

NATIONAL—

H. B. Parks, San Antonio, Acting Secretary American Honey Producers' League.

ALABAMA—

Dr. F. L. Thomas, Auburn, Specialist in Entomology, Extension Lecturer.

ARIZONA—

Charles H. Vorhies, Tucson, Entomologist, in charge of teaching and experimental work in beekeeping.

Earl F. Matteson, St. David, State Apiary Inspector.

Geo. M. Frizzell, Tempe, Secretary State Beekeepers' Association.

Don C. Mote, State Entomologist, investigations in bee diseases.

ARKANSAS—

W. J. Baerg, Fayetteville, Entomologist, in charge. Secretary State Beekeepers' Association.

CALIFORNIA—

Prof. G. A. Coleman, Berkeley, Apiculturist in charge.

Ralph Benton, Berkeley, Instructor in charge of correspondence course in beekeeping.

A. B. Shaffner, Los Angeles, Secretary State Beekeepers' Association.

C. E. Millspaugh, Los Angeles, General Manager Honey Producers' Cooperative Exchange.

A. B. Shaffner, Los Angeles, Secretary Consolidated Honey Producers' of California, Incorporated.

Miss E. A. Barr, Los Angeles, Secretary Southern California Beekeepers' Association.

**Official List of County Inspectors**

Alameda—Cary W. Hartman, Oakland.
Butte—J. W. Meakins, Chico.
Contra Costa—Geo. W. Moore, Antioch.
Fresno—C. R. Snyder, Selma.
Glenn—M. A. Sayler, Orland.
Imperial—A. Logan, Calipatria.
Inyo—E. E. Burdick, Big Pine.
Kern—H. L. Weems, Bakersfield.
Kings—P. H. Bales, Hanford.
Lassen—O. C. Miller, Standish.
Los Angeles—Geo. D. De Sellem, 121 Temple St., Los Angeles.
Merced—W. W. Thompson, Dos Palos.
Monterey—A. Norton, Pacific Grove, 518, Fountain Ave.
Napa—W. D. Butler, Napa.
Orange—J. E. Pleasants, Orange.
Riverside—T. O. Andrews, Corona.
Sacramento—B. B. Hogaboom, Elk Grove.
San Bernardino—B. H. Stanley, Rialto.
San Diego—Fred Hanson, San Diego, 4430 New Jersey St.
San Joaquin—C. H. L. Souder, Linden.
Santa Cruz—Phil J. Strubel, Felton.
Shasta—E. S. Bartell, Anderson.
Siskiyou—Roy D. Tait, Hornbrook.
Stanislaus—Willis Lynch, Salida.
Tehama—J. P. Summers, Los Molinos.
Tulare—S. J. Miller, Tulare.
Tuolumne—H. H. Sherrard, Sonora.
Ventura—Newton Cale, Ojai.

COLORADO—

C. P. Gillette, Ft. Collins, State Entomologist in charge.

Wesley Foster, Boulder, Deputy Bee Inspector.

County Inspectors—

W. C. Evans, Ft. Collins, Larimer County.

S. A. Mendum, Boulder, Boulder County.

Walter Martin, Brighton, Adams County.

N. L. Henthorne, Platteville, Weld County.

George R. Gilmore, Ft. Morgan, Morgan County.

Chas. Hollingshead, Sterling, Logan County.

W. H. Birney, Las Animas, Bent County.

George McMannan, Carlton, Prowers County.

Harry Ingalls, Ordway, Crowley County.

A. S. Parsons, Rocky Ford, Otero County.

E. D. Smith, Durango, La Plata County.
W. H. Kendle, Montrose, Montrose County.
J. G. Jewell, Delta, Delta County.
Wm. Harkleroad, DeBeque, Mesa County.
Frank Nieubauer, New Castle, Garfield County.
W. L. Cooper, Pueblo, Pueblo County.
Associations—
Frank Rauchfuss, Denver, General Manager Colorado Honey Producers' Association.
Wesley Foster, Boulder, Secretary State Beekeepers' Association.

CONNECTICUT—
L. B. Crandall, Storrs, Teaching and Extension.
Inspectors—
A. W. Yates, Hartford.
H. W. Coley, Westport.
Associations—
Louis St. Clair Burr, South Manchester, Secretary State Beekeepers' Association.

DELAWARE—
No regular work. Wesley Webb, Dover, Secretary State Board of Agriculture, provides an occasional lecturer at farmers' institutes, and some inspection.

FLORIDA—
Wilmon Newell, Plant Commissioner, Gainsville, in charge of bee disease eradication.
C. A. Reece, Gainsville, Assistant.
University—
Wilmon Newell, Gainsville, Beekeeping Specialist, extension.
Frank Stirling, Gainsville, Instructor.
Associations—
K. E. Bragdon, Cocoa, Secretary State Beekeepers' Association.
H. E. Rish, Wewahitchka, Secretary Tupelo Honey Exchange.

GEORGIA—
T. H. McHatton, Horticulturist, Athens, answers correspondence relating to beekeeping. Extension work temporarily suspended, at the College of Agriculture.
A. C. Lewis, State Entomologist, Atlanta; in charge apiary inspection.
Mrs. Madge B. Merritt, Brunswick, Secretary State Beekeepers' Association.

IDAHO—
W. H. Wicks, Boise, Director Bureau of Plant Industry, State Bee Inspector in charge.
Inspectors—
I. F. Carter, Sandpoint.
C. E. Frederich, Kuna.
W. A. Griggs, Nampa.
J. C. Gunderson, Route 3, Rigby.
A. A. Hansen, Lewiston.
Chas. H. Harper, Filer.
James S. Hite, Weiser.
W. G. Moore, Mountain Home.
C. M. Park, Emmett.
D. C. Stahlman, Buhl.
J. W. Stewart, Rupert.
C. H. Stinson, Twin Falls.
James P. Tye, Mountain Home.
Charles E. Sheldon, Couer d'Alene.
Associations—
Mr. P. S. Farrell, Caldwell, Secretary Idaho-Oregon Honey Producers' Association.

ILLINOIS—
Prof. J. W. Folsom, Urbana, Instructor in State University.
Associations—
G. M. Withrow, Mechanicsburg, Secretary State Beekeeper's Association.
John C. Bull, Valparaiso, Ind., Secretary Chicago Northwestern Beekeepers' Association.
Inspectors—
A. L. Kildow, Putnam, Chief Inspector.
Deputies—
C. F. Bender, Newman.
C. W. Finch, 1451 Ogden Ave., Chicago.
A. L. Logan, Edwardsville.
H. L. King, Route 5, Springfield.
C. H. Wiley, Route 1, Harrisburg.

INDIANA—
John J. Davis, Entomologist Purdue University, Lafayette, in charge.
Professor Price, Instruction.
James Troop, teaches beekeeping incidentally with entomology.
Associations—
Ross B. Scott, LaGrange, Secretary State Beekeepers' Association.
Inspectors—
Frank N. Wallace, State Entomologist, Indianapolis, in charge.
Deputies—
T. C. Johnson, Logansport.
James E. Starkey, Bunker Hill.
C. O. Yost, Indianapolis.

IOWA—
F. B. Paddock, State Apiarist, Ames.
Wallace Park, Ames, Investigations in Apiculture.
Newman S. Lyle, Ames, Extension.
F. B. Paddock, Ames, Secretary State Beekeepers' Association.

KANSAS—
J. H. Merrill, State Apiarist, Manhattan.
Inspectors—
A. V. Small, Augusta.
J. A. Nininger, Hutchinson.
Rev. E. V. Gardner, Eureka.
A. W. Jones, Wichita.
O. J. Jones, Wichita.
Frank Van Haltern, Wathena.
L. P. Whitehead, Wathena.
George Pratt, Topeka.
Associations—
O. F. Whitney, Topeka, Secretary State Beekeepers' Association.
J. H. Merrill, Manhattan, Secretary Kansas Honey Producers' League.
Mrs. M. F. Latshaw, Manhattan, Secretary Northwest Kansas Beekeepers' Association.
A. W. Jones, Wichita, Secretary Southwest Kansas Beekeepers' Association.
R. H. Clark, North Topeka, Secretary Eastern Kansas Beekeepers' Association.

KENTUCKY—
Prof. H. Garman, Entomologist, Lexington, in charge.
H. H. Jewett, Lexington, teaches a course in beekeeping at the University.
H. R. Niswonger, Specialist in Horticulture, Lexington, extension lectures in horticulture, and occasionally in beekeeping.
Association—
H. Garman, Lexington,, Secretary State Beekeepers' Association.

LOUISIANA—
E. C. Davis, University Station, Baton Rouge, Bee Specialist in State University.
E. C. Davis, Baton Rouge, Secretary State Beekeepers' Association.

MARYLAND—
Ernest N. Cory, State Entomologist, College Park, Inspector of Apiaries.
Ernest N. Cory, College Park, Secretary State Beekeepers' Association.

MASSACHUSETTS—
No work in beekeeping at College of Agriculture.
Inspectors—
Leland Taylor, Assistant Director Plant Pest Control, Boston, in charge.
Burton N. Gates, Worcester.
O. F. Fuller, Blackstone.
Ivan Rawson, Pittsfield.
Edward Thorne, Worcester.

MICHIGAN—
B. F. Kindig, East Lansing, in charge of Apiculture at the college.
Russell H. Kelty, East Lansing, Instructor in Beekeeping.
Edwin Ewell, Ypsilanti, Extension Specialist in Beekeeping.
Inspectors—
B. F. Kindig, East Lansing, State Inspector of Apiaries.
P. T. Ulman, East Lansing, Chief Deputy Apiary Inspector.
Russell H. Kelty, East Lansing, Deputy Apiary Inspector.
County Inspectors—
L. C. Retan, Jasper.
O. M. Wallace, Burton.
C. C. Chamberlain, Romeo.
F. G. Layer, Unionville.
F. E. Jones, Mendon.
D. B. Goodspeed, Marcellus.
A. E. Sharrow, Plymouth.
O. Jones, Stockbridge.
Earl Townsend, Flint.
A. B. Ruggee, Traverse City.
C. D. Townsend, St. Johns.
C. Newhouse, Grand Rapids.
A. F. Mead, Battle Creek.
Floyd Markham, Ypsilanti.
Association—
Russell H. Kelty, East Lansing, Secretary State Beekeepers' Association.
There are also 33 local associations in the State of Michigan.

MINNESOTA—
Francis Jager, University Farm, apiculturist in charge.
G. C. Matthews, University Farm, Assistant Apiculturist.
L. V. France, University Farm, Investigations.
Inspector—
Charles D. Blaker, State Apiarist, Minneapolis.
Association—
Otto L. Wille, Minneapolis, Sec-

retary State Beekeepers' Association.

### MISSISSIPPI—

R. B. Willson, Extension Specialist in Beekeeping, Agricultural College.

### MISSOURI—

Leonard Haseman, State Entomologist, Columbia. Teaches course in beekeeping.

### MONTANA—

R. A. Cooley, State Entomologist, Bozeman. Both teaching and extension work in beekeeping.

Frank E. Clift, Huntley, Secretary State Beekeepers' Association.

### NEBRASKA—

Myron H. Swenk, Entomologist, Lincoln, teaching and extension.

O. E. Timm, Bennington, Secretary Nebraska Honey Producers' Association.

### NEVADA—

George G. Schweis, Reno, State Bee Inspector.

Deputies—

G. A. Norton, Fallon.
Chas. Johnston, Yerington.
R. M. Guthrie, Reno.
J. I. Earl, Overton.

### NEW HAMPSHIRE—

W. C. O'Kane, Entomologist, College of Agriculture, Durham.

J. R. Hepler, Durham, in charge College Apiary.

H. B. Stevens, Durham, Secretary State Beekeepers' Association.

### NEW JERSEY—

E. G. Carr, New Egypt, Extension Specialist in Beekeeping, also teaches course at the College of Agriculture.

E. G. Carr, New Egypt, Secretary State Beekeepers' Association.

### NEW MEXICO—

No work at college; no State organization.

### NEW YORK—

George H. Rea, Ithaca, Extension Specialist in Apiculture.

Associations—

H. E. Gray, Ft. Edward, Secretary Adirondack Beekeepers' Association.

Stephen Davenport, Indian Falls, Secretary Eastern New York Beekeepers' Association.

J. H. Cunningham, Syracuse, Secretary State Beekeepers' Association.

J. Roy Lincoln, Niagara Falls, Secretary Western New York Honey Producers' Association.

There are also 29 county associations in New York.

Inspectors, permanent—

Charles Stewart, Johnstown.
W. D. Wright, Altamont.
Summer 1920—L. E. Hall, Tribes Hill..
S. D. House, Camillus.
A. W. Smith, Parksville.
O. L. Hershiser, Kenmore.
D. R. Hardy, Watertown.
H. E. Gray, Ft. Edward.
J. H. Sprout, Lockport.
D. L. Woodward, Clarksville.
L. M. Yandoh, Fulton.
T. I. Dugdale, West Galway.
John Dunbar, Phoenix.
R. H. Quick, Nichols.
Lemar Coggshall, Groton.
W. D. Browning, Johnson City.

Schools of Agriculture—

George C. Norton, State School of Applied Agriculture on Long Island, Farmingdale, Instructor in Beekeeping.

E. Hodder, Schoharie School of Agriculture, Cobleskill, Instructor in Beekeeping.

T. H. Townsend, School of Agriculture, Morrisville, Instructor in Beekeeping.

### NORTH CAROLINA—

Franklin Sherman, Jr., State Entomologist, Raleigh.

C. L. Sams, Extension Specialist in Apiculture, Raleigh.

Z. P. Metcalf, State College, West Raleigh, teaches a course in beekeeping.

Herbert Spencer, West Raleigh, teaching and investigation.

Association—

J. E. Eckert, Winston-Salem, Secretary State Beekeepers' Association.

### NORTH DAKOTA—

No beekeeping at College of Agriculture nor State beekeepers' organization.

### OHIO—

Jas. S. Hine, Columbus, in charge of Apiculture, State University.

Inspectors—

E. C. Cotton, Chief Bureau of Plant Industry, Columbus, in charge.

Deputies—

R. J. Porter, Delphos.
R. D. Hyatt, Columbus.

Association—

J. S. Hine, Columbus, Secretary State Beekeepers' Association.

### OKLAHOMA—

C. E. Sanborn, Entomologist, Stillwater, teaching and research work in beekeeping.

Inspectors—

R. L. Blackwell, Oklahoma City, State Bee Inspector.

Association—

Mr. Howard, Wewoka, Secretary State Beekeepers' Association.

### OREGON—

A. L. Lovett, Corvallis,, Entomologist in charge.

H. A. Scullen, Corvallis, Teaching and Research at the College of Agriculture, also some extension work in beekeeping.

H. A. Scullen, Corvallis, Secretary State Beekeepers' Association.

Oregon has a law providing for County Inspectors, but at present none are serving.

### PENNSYLVANIA—

J. G. Sanders, Director of Plant Industry, Harrisburg, in charge.

Chas. N. Greene, Harrisburg, Chief Apiary Adviser.

Inspectors—

Calvin C. Brinton, Pittston.
Oscar L. Rothwell, Gillett.
R. C. Wittman, St. Marys.
George Stroud, Luzerne.

Chas. N. Greene, Troy, Secretary State Beekeepers' Association.

RHODE ISLAND—A. E. Stene, Kingston, State Entomologist, in charge apiary inspection.

Edward D. Anthony, Barrington, Secretary Rhode Island Beekeepers' Society.

### SOUTH CAROLINA—

A. F. Conradi, Entomologist, Clemson College, in charge. Research.

E. S. Provost, Clemson College, Teaching and Extension.

### SOUTH DAKOTA—

H. C. Severin, Entomologist, Brookings, in charge of Apiculture at the State College of Agriculture.

George Gilbertson, Brookings, teaching.

Inspectors—

L. A. Syverud, Yankton.
Ernest W. Fox, Fruitdale.

### TENNESSEE—

G. M. Bentley, State Entomologist, Knoxville, in charge of Apiculture in State University.

Hamilton Steele, Instructor, Knoxville.

G. L. Herrington, Extension, Knoxville.

Floyd Brailliar, Madison, Nashville Agricultural Institute.

Inspectors—

J. M. Buchanan, Franklin, State Apiarist.

Associations—

G. M. Bentley, Knoxville, Secretary State Beekeepers' Association.

Hamilton Steele, Knoxville, Secretary East Tennessee Beekeepers' Association.

### TEXAS—

S. W. Bilsing, College Station, in charge of Apiculture, College of Agriculture.

R. R. Reppert, College Station, Extension Entomologist.

Inspectors—

M. C. Tanquary, State Entomologist, College Station, in charge.

C. S. Rude, College Station, Chief Inspector.

A. H. Alex, College Station.
C. E. Heard, College Station.
H. S. Cavitt, College Station.

Association—

E. G. LeStourgeon, Manager Texas Honey Producers' Association.

### UTAH—

George E. King, Logan, in charge of Apiculture at the College of Agriculture.

H. B. Terriberry, Capitol Building, Salt Lake City, State Bee Inspector.

H. B. Terriberry, Secretary State Beekeepers' Association.

### VERMONT—

Rollin H. Barrett, Randolph Center, Apiculture in State School of Agriculture.

Inspectors—

Elbert S. Brigham, Commissioner of Agriculture, Montpelier, in charge.

J. E. Crane, Middlebury.
C. E. Lewis, East Shoreham.
F. L. Stearns, North Bennington.

Associations—

F. B. Manchester, Middlebury, Secretary Vermont Beekeepers' Association.

### VIRGINIA—

W. J. Schoene, State Entomologist, Blacksburg.

W. J. Schoene, Secretary State Beekeepers' Association.

### WASHINGTON—

George W. B. Saxton, Harwood, Secretary State Beekeepers' Association.
Mrs. J. E. Thomson,, Cour de Alene, Idaho, Secretary Inland Empire Beekeepers' Association.
Inspection—
A. L. Melander, Pullman, Entomologist in charge.
J. B. Epsy, White Swan.
J. O. Wallace, Chehalis.
W. L. Cox, Elma.
C. H. Junge, Everett.
C. T. Tucker, Oak Point.
Fred Mandery, Tenino.

### WEST VIRGINIA—

L. M. Peairs, Morgantown, Teaching and Experiment at College of Agriculture.
Will C. Griffith, Elm Grove, Secretary State Beekeepers' Association.
M. K. Malcolm, Charleston, Apiarist State Department of Agriculture.
Inspectors—
T. K. Massie, Hatcher.
L. D. Sharp, Slaty Fork.
Grant Luzador, Pennsboro.
Adam J. Yahn, Tridelphia.

### WISCONSIN—

H. F. Wilson, Entomologist, Madison, in charge of Apiculture at the State University.
James I. Hambleton, Apiarist at University, Madison.
H. L. McMurray, Madison, Extension Specialist in Beekeeping.
Inspectors—
S. B. Fracker, State Entomologist, Madison, in charge.
H. L. McMurray, Chief Apiary Inspector.
C. D. Adams, Wauwatosa.
H. J. McMurray, Madison.
Newton Boggs, Viroqua.
County Apiary Inspectors—
Barron—Geo. Stowell, Barron. Wis.
Chippewa—Geo. Lotz, Boyd, Wis.
Clark—J. S. Sloniker, Greenwood, Wis.
Columbia—A. C. Allen, Portage, Wis.
Eau Claire—M. E. Eggers, Eau Claire, Wis.
Dane—R. L. Siebecker, Madison, Wis.
Fond du Lac—H. R. Tavs, Brandon, Wis.
Forest—J. Gentz, Wabeno, Wis.
Jefferson—W. R. Abbott, Fort Atkinson, Wis.
Langlade—James Cherf, Antigo, Wis.
Manitowoc—F. F. Stelling, Reedsville.
Marathon—R. W. Gunzel, Wausau.
Outagamie—G. A. Breitrick, Appleton, Wis.
Price—E. C. Rothe, Kennan, Wis.
Richland—W. I. Hatch, Richland Center, Wis.
Sauk—F. Hanley, North Freedom, Wis.
Shawano — R. A. Schwarzkopf, Bowler, Wis.
Sheboygan — Ivan Whiting, Plymouth, Wis.
Vernon—J. A. Doerr, Viroqua.
Waukesha—C. W. Aeppler, Oconomowoc, Wis.
Walworth—I. A. Travis, Elkhorn, Wis.
Winnebago — H. E. Greenwood, Oshkosh, Wis.
Wood—W. A. Sprise, Grand Rapids, Wis.
Associations—
H. F. Wilson, Madison, Secretary State Beekeepers' Association.
There are a number of county organizations, also.

### WYOMING—

No organization.

## Canada

### DOMINION—

F. W. L. Sladen, Government Farms, Ottawa, Dominion Apiarist.
C. B. Gooderham, Government Farms, Ottawa, Apiarist.
P. Caron, Government Farms, Ottawa, Laboratory Assistant.
Investigations—
V. Kuhn, Experimental Farms, Agassiz, B. C.
P. Hamel, Experimental Farms, Cap Rouge, P. Q.
H. Newson, Experimental Farms, Charlottetown, P. E. I.
S. P. Pearson, Experimental Farms, Fredericton, N. B.
J. W. Sootheran, Experimental Farms, Invermere, B. C.
H. Straiton, Experimental Farms, Kapuskasing, Ont.
E. D. Craig, Experimental Farms, Kentville, N. S.
B. C. Milne, Experimental Farms, Lacombe, Alta.
T. F. Ritchie, Experimental Farms, Lennoxville, P. Q.
C. A. Crossfield, Experimental Farms, Lethbridge, Alta.
R. D. L. Bligh, Experimental Farms, Nappan, N. S.
C. F. Jeffrey, Experimental Farms, Sidney, B. C.
G. W. Johnson, Experimental Farms, Summerland, B. C.

### BRITISH COLUMBIA—

W. J. Sheppard, Chief Apiary Inspector, Nelson.
F. Dundas Todd, Assistant Apiary Inspector, Victoria.
W. H. Gray, Assistant Apiary Inspector, N. Lonsdale.
W. H. Turnbull, Assistant Apiary Inspector, Sullivan Station.
A. W. Finlay, Assistant Apiary Inspector, Huntingdon.
A. Keir, Assistant Apiary Inspector, N. Lonsdale.
Capt. H. L. Chittenden, Assistant Apiary Inspector, Bradner.
Associations—
John Brooks, Vancouver, Secretary B. C. Beekeepers' Association.
W. H. Turnbull, Sullivan Station, Secretary B. C. Honey Producers' Association.

### MANITOBA—

J. H. Kiteley, Winnipeg, Extension Service, in charge.
James Redden, Elmwood, Winnipeg, Secretary Beekeepers' Association.

### NOVA SCOTIA—

W. H. Brittain, Provincial Entomologist, Truro, in charge.

### ONTARIO—

Prof. F. Eric Millen, Provincial Apiarist, Guelph, in charge.
Inspectors—
James Armstrong, Simcoe.
Wm. A. Weir, Toronto.
Wm. Agar, Kleinburg.
Eric Hutchinson, Mount Forest.
Horace Haines, Fenwick.
S. A. Stewart, Cataraqui.
H. C. Harris, Alliston.
O. A. Sipple, Tavistock.
R. M. Taylor, Port Dover.
Chas. W. Houghton, Newton Robinson.
John Myers, Stratford.
R. E. L. Harkness, Iroquois.
Wm. Thompson, Indian River.

### PRINCE EDWARD ISLAND—

Prof. Hansuld, Provincial Department of Agriculture, Charlottetown.
Harold Newson, Charlottetown, Bee Inspector for Prince Edward Island.

### QUEBEC—

C. Vaillancourt, Chief Division of Apiculture, Quebec.
L. J. A. Dupuis, Assistant Chief, Division of Apiculture, Quebec.
H. J. Plourde, Lecturer Division of Apiculture, Quebec.
R. Fortier, Secretary Division of Apiculture, Quebec.
A. Pettigrew, Assistant Secretary Division of Apiculture, Quebec.
Inspectors—
H. Beland, Division of Apiculture, Quebec.
B. Brissette.
A. Lalonde.
Arthur Comire.
Ernest Fortin.
A. Philippon.
J. G. Sylvester.
L. Traversy.
Dr. O. A. Comire.
S. M. Dechene.
E. Girard.
A. Beauchesne.
Ulysses Thibault.
H. Lupien.
Rev. A. Bouillon.
V. Chercuite.
Associations—
J. A. Prud'homme, Ste-Philomene, Secretary Association of Beekeepers, Province of Quebec.
MacDonold College—
W. J. Tawse, Lecturer in Horticulture teaching and research in Beekeeping.
Institut Agricole, La Trappe, Bro. M. Maur O. C. R., Professor of Beekeeping.

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### Oregon Beekeepers' Association

The Oregon Beekeepers' Association, at a recent meeting at Salem, elected the following officers: A. J. Sanford, President;, Redmond; H. A. Scullen, Secretary-Treasurer, Corvallis. Oregon now has a law providing for county inspectors, but we understand none are now serving.

### HONEY PRODUCERS' LEAGUE

The members of the Executive Committee of the American Honey Producers' League met at the Great Northern Hotel, December 6 and 7. This meeting was brought about by a call issued by the President, E. G. Le Stourgeon. He invited all those interested in the work of the League to meet with the Executive Committee as an advisory body. After discussing the problems of the League the Executive Committee took the following action:

B. F. Kindig, State Apiary Inspector of Michigan, was elected Vice President in the place of George H. Rea, resigned. In place of Charles B. Justice, temporary Secretary, the Executive Committee appointed H. B. Parks, of San Antonio, formerly with the Experiment Station, College Station, Texas, to be Acting Secretary and Treasurer.

The following committees, with power to select their associates, were elected: Education, B. F. Kindig; Equipment, C. B. Baxter, Leavenworth, Kans.; Legislation, Colin P. Campbell, Grand Rapids, Mich.; Markets, Frank Rauchfuss, Denver, Colo.; Legal Aid, O. L. Hershiser, Kenmore, N. Y.; Arbitration; H. B. Parks, San Antonio; Research, Dr. E. F. Phillips, Washington, D. C.

In order that something might be accomplished at once to help in relieving the present market situation a committee on advertising was appointed. This committee has the power to solicit funds and to get ads relative to the uses of honey on the market just as rapidly as possible. Clifford Muth, of Cincinnati, is chairman of this committee. C. B. Baxter and H. B. Parks are also on this committee.

The regular meeting of this League will take place in Indianapolis, Ind., February 15, 16 and 17. At this meeting, which from now on will be termed the Annual Meeting, the above committeemen will report the activities which have been commenced and the progress made. Those State Associations which have become affiliated with the League are entitled to a representative at this meeting and should notify the Secretary before the time of the meeting relative to their representative, so that proper credentials may be issued. All of the committees or bureaus are now ready for action. Anyone desiring the aid of any of these bureaus should address his communications to H. B. Parks, Secretary-Treasurer of American Honey Producers' League, Box 1048, San Antonio, Texas. The letter will then be sent to the proper man for action.

The American Honey Producers' League urges the attendance of everyone interested in the betterment of beekeeping at this meeting.

### Missouri Meeting

The Missouri Apicultural Society will hold their regular annual meeting at Columbia during Farmers' Week, January 17 to 21. Those interested can secure farther information and a program from Dr. L. Haseman, Columbia, Mo.

### New Jersey Beekeepers' Association

Beekeepers of New Jersey and surrounding States within easy traveling distance of Trenton are looking forward with much interest to the annual meeting of the New Jersey Beekeepers' Association on January 13-14, 1921. The interest in the larger hive is keen at this time, and when Mr. C. P. Dadant discusses the Dadant hive and system of beekeeping the meeting place will be packed.

In the evening of the 13th Mr. Dadant will give an interesting sketch of American and foreign beekeeping at the annual dinner of the Association. With Dr. Thomas J. Headlee as toastmaster, a very enjoyable evening is assured.

To complete the program, Mr. Geo. H. Rea, Apicultural Expert for New York State, and Mr. Myers, a practical honey producer of the same State, will also address the meeting.

Elmer G. Carr, Sec.-Treas.

### Beekeeping Short Courses

Short courses in beekeeping will be held this winter as follows:

Iowa College of Agriculture, Ames, January 4 to 7. Lectures by F. B. Paddock, C. P. Dadant, Wallace Park, L. H. Pammel, E. W. Atkins, A. H. Dunn, H. F. Wilson, E. D. Ball, R. E. Buchanan and R. K. Bliss.

Kansas College of Agriculture, at Manhattan, February 7 to 12. Lectures by J. H. Merrill, Frank Van Haltern, Geo. M. Hedges, J. A. Nininger, E. W. Atkins, E. R. Root, Carl F. Buck, F .B. Paddock, C. P. Dadant, E. V. Gardner and E. G. Le Stourgeon.

Ohio State University, at Columbus, January 31 to February 4. Course in charge of Dr. E. F. Phillips and Prof. J. S. Hine; program not yet received.

New York College of Agriculture, at Ithaca, February 7 to 12. Course in charge of Dr. E. F. Phillips and George S. Rea. Program not yet received.

### An Error

In our December number we stated that Alton L. Morgan was chairman of the Madison County, Illinois, Beekeepers' Association. It should be Alton L. Logan. Since organizing the beekeepers have had sufficient inquiry through the chairman to dispose of all the honey of the members.

### Another Association Joins American Honey Producers' League

The Chicago Northwestern Beekeepers' Association held its annual meeting at the Great Northern Hotel, Chicago, on Monday and Tuesday, December 6 and 7. While this meeting was a very interesting one, having a very good program, the chief item of interest centered in the debate on whether the association should join the American Honey Producers' League. After much discussion and debate the resolution was put before the assembly and finally voted unanimously in favor of joining.

Among the speakers were Mr. E. G. LeStourgeon, San Antonio, Texas; Dr. Fracker, Madison, Wis.; C. O. Yost, Indianapolis, Ind.; Kennith Hawkins, Watertown, Wis. The same officers were re-elected for the coming year.

### Nebraska Beekeepers to Meet

Secretary O. E. Timm advises us that the Nebraska Honey Producers' Association will hold their annual meeting at University Farm on Tuesday, January 4, and that a good program has been prepared.

### A Big Sale of Honey

In our columns some months ago was an account of the sale of a large amount of honey by the New York Globe, which bought several cars of extracted honey in 60-pound cans from Idaho producers and sold it direct to the consumers in the city of New York. So much interest was developed as a result of this campaign that the same publication is doing the same thing again this year, this time selling it through the local stores in 5-pound cans. This honey is retailing at from 29 to 33 cents per pound put up in this way, according to the quality of the honey. A recent issue of the paper stated that 233,700 pounds had been sold so far. As a result of the publicity attending this effort an enormous amount of honey will be sold to the consumers in New York this winter.

### Honey Inspector

A honey inspector has recently been appointed by the Wisconsin division of crops and markets. It is his business to see that all honey offered for sale in that State conforms to the law as to grade. Every package must be stamped with the weight and grade of the honey offered.

### A New Publication

"Fur, Food and Fancy" is the name of a new publication which now comes to our desk. It is devoted to rabbits, pet stock, fur farming, bees, etc. Kenneth Hawkins, of Watertown, Wis., is the editor of the bee department. We are glad to see this department in such capable hands. The publication is well printed, attractively illustrated, and is published at Chicago.

### Honey Week Proposed

The beekeepers of Florida have endeavored to induce the Governor of that State to issue a proclamation designating the first week in January as honey week. It is proposed to secure the co-operation of the grocers in inducing everybody to use honey for the first week of the new year. At time of going to press we had not learned whether they were successful.

### Ontario County Beekeepers to Meet

F. Greiner, Secretary of the Ontario Bee Beekeepers' Society, sends notice that the annual meeting will be held at the court-house in Canandaigua, N. Y. on January 11.

### Pennsylvania Show

The fifth annual Pennsylvania Farm Products Show will be held at Harrisburg, January 24 to 28. All exhibits of honey and wax should be sent to Charles N. Greene, Department of Agriculture at Harrisburg with exhibitor's name and address plainly marked on each package.

### Concerning Drone Comb

Jes Dalton, of Louisiana, writes to call attention to the fact that the queen breeder can overdo the matter of eliminating drone-combs, saying that he used great care for years to remove all possible drone-comb from his hives until he noticed a dearth of drones with which to mate the many virgin queens daily emerging.

Articles regarding the elimination of drone-comb are intended for the honey producer, rather than the queen breeder. Too many beekeepers greatly reduce their crops by the rearing of useless drones The queen breeder, on the other hand, is principally interested in the production of bees, and a large number of drones at all seasons is esential to his success.

### A Correction

I wish to call your attention to a mistake in the Journal of November, 1920, page 381, in the article on wintering by use of building felt, by me. It should read "1½ pound building felt," meaning 1½ pounds to the square inch, and should be placed under the "cover," not the "corners."

Ira G. Blondell.

### Scullen to Oregon College of Agriculture

The many friends of H. A. Scullen, who knew him while connected with the Iowa College at Ames, or the Washington College at Pullman, will be pleased to know that he has been engaged for beekeeping work at the Orgon College of Agriculture at Corvallis. Professor Lovett, Entomologist of that institution, has been devoting a portion of his time to the beekeeping department for some time past. It is good news to hear that beekeeping will now receive the entire time of an assistant.

### Florida Beekeepers

The Florida State Beekeepers' Association was organized at an enthusiastic meeting of beekeepers from all parts of the State, held at the University of Florida, at Gainesville, October 6, when J. W. Barney, of Bradentown, was named President.

Other officers of the Association are: J. K. Isbell, Wewahitchka, Vice President; K. E. Bragdon, Cocoa, Secretary, and J. R. Hunter, Wewahitchka, Treasurer.

Three sessions were held during the day, with an attendance of 100 beekeepers. The organization of the State Association has been fostered by Wilmon Newell, of the University of Florida. who is in charge of the apiary inspection work in that State. The State Association is the result of the crystallization of opinion among Florida beekeepers as the result of several strong local associations which have been organized in different parts of the State.

Florida now has an excellent apiary inspection law, and Mr. Newell, who has been assisted by Charles Reese and others of the State Plant Commissioner's Office, will now be assisted by the more than 100 members of the Florida State Association in spreading the gospel of better beekeeping.

### Another New Beekeeper

Friends of Chas. H. Reese, former Apiarist of West Virginia and now in charge of bee inspection in Florida, will be glad to learn that a new daughter was born to Professor and Mrs. Reese on September 12.

## CLASSIFIED DEPARTMENT.

Advertisements in this department will be inserted for 5 cents per word, with no discounts. No classified advertisements accepted for less than 35 cents. Count each initial or number as one word.

Copy for this department must reach us not later than the 20th of the month preceding date of issue. If intended for classified department it should be so stated when advertisement is sent.

### BEES AND QUEENS

Lower Price. Top Quality. Atwater's Honey.

BEES in 2-pound packages, with or without queens. Now booking orders for spring delivery. Safe arrival guaranteed. Always glad to answer questions. Caney Valley Apiaries,
J. D. Yancey, Mgr., Bay City, Texas.

FOR SALE—Italian bees, hives, equipment.
Wm. Hill, Warsaw, Ill.

THREE-BAND BREEDERS from one of the heaviest hooey-gathering strains in the State. $10 each. Delivery May 15.
A. V. Small, Augusta, Kans.

1921 PRICES on nuclei and queens: 1-frame nucleus, $3; 2-frame nucleus, $5; 3-frame nucleus, $6.50; without queens, f. o. b. Macon, Miss.; 5 per cent discount on lots of 25 or more. Untested queens $1.25 each, $15 per doz; tested queens $2 each, $22 per doz. No. disease; inspection certificate with each shipment. Safe arrival and satisfaction guaranteed in U. S.. Queens sold only with nuclei.
Geo. A. Hummer & Sons, Prairie Point, Miss

PACKAGE BEES—Same old prices if you send cash with order.
E. A. Harris, Albany, Ala.

FOR SALE—Three-banded; Italian queens untested, $1.50 each; 6, $7.50; 12, $14. Select untested, $1.75 each; satisfaction guaranteed.
W. T. Perdue & Sons,
R. No. 1, Fort Deposit, Ala.

WE are booking orders for our golden Italian queens for spring delivery after April 16. Untested queens, 1, $1.50; doz., $15; select untested queens, 1, $1.75; doz., $18; virgin queens, 1, 75c; doz., $9; tested queens, 1, $3; doz., $36 Safe arrival guaranteed.
Tillery Brothers, Georgiana, Ala.

FOR SALE—Eutopian quality Italian queens, the kind that satisfy. May 15 to June 10, untested, $2 each. After June 10, untested, $1.50 each, 6, $8. Virgins, 90c each; 6, $4.75.
Eutopian Apiaries, Amboy, Minn.

FOR SALE—Hardy Italian queens, $1 each
W. G. Lauver, Middletown, Pa.

FOR SALE—Large, hardy, prolific queens: 8-banded Italians and golden pure mating and safe arrival guaranteed. We ship only queens that are top notchers in size, prolificness and color. Untested, $2 each; 6, for $11; 25 for $45; tested queens $3 each, 6 for $16.
Buckeye Bee Co., Box 448 Massillon, Ohio.

WE are now booking orders for early spring delivery of two and three-frame nuclei, with untested or tested queens. Write for prices and terms. We also manufacture cypress hives and frames.
Sarasota Bee Co., Sarasota, Fla.

FOR SPRING DELIVERY—One good Italian queen, 1 Hoffman standard frame emerging brood, 1 pound live bees, price complete $6.50, f o. b. Bordelonville. Queen introduced, mated, laying enroute; loss in transit replaced if noted on express tag by agent; no disease in State. References given. Orders booked, May delivery, one-fifth cash; orders filled in rotation. Jess Dalton, Bordelonville, La.

NUCLEI for 1921—We beg to advise those who intend to purchase nuclei to enter their orders early in order to be certain of being able to obtain them, as the demand greatly exceeded the supply during the past season, and the majority of late orders went unfilled. We are now booking orders for three-frame nuclei of Italian bees, with Italian queen, at $6.50 Hybrid bees, with guaranteed pure Italian queen, at $5.50. Terms, one-third down with order. No disease, safe arrival and satisfaction guaranteed. A. R Irish,
Doctortown, Georgia.

EDSON APIARIES now booking orders for queen bees for delivery during season of 1921. Prices: One untested queen, $1.25; 50 untested queens, $57.50; 100 untested queens, $100. Orders filled in rotation; first shipments March 1, 1921.
Edson Apiaries, Gridley, Calif.

ORDERS BOOKED NOW for 1921 shipments of bees and queens. Send for descriptive circular and price list.
R. V. Stearns, Brady, Texas.

DAY-OLD QUEENS—Superior improved Italians, mailed in safety introducing cages. Safe arrival and satisfaction guaranteed anywhere in the U S. and Canada. Send for circular. Order in advance. Prices, April to October, 1, 75c; 12, $7.20; 100, $60.
James McKee, Riverside, Calif.

A. I. ROOT STRAIN of leather-colored Italians that are both resistant and honey gatherers. The queens and bees need no recommendation for they speak for themselves. Untested, one, $1.50; six, $8.40; twelve, $15. Select untested, one, $2; tested, one, $2.50; select tested, one, $3. For larger amounts write,
A. J. Pinard, Morgan Hill, Calif.

PURE ITALIAN QUEENS—Golden or leather colored, packages and nuclei; 1 untested queen, $1.50; 6, $7.50; 12, $13.50; 50, $55; 100, $100; virgins, 50c each; packages, 24 and under, $2.25 per pound; 25 and over, $2 per pound; nuclei, 1-frame, $4; 2-frame, $6; 3-frame, $7.50; queens extra. One-story 10-frame colony with queen, $12.
Golden Star Apiaries,
R. 3, Box 188, Chico, Calif.

BEES AND QUEENS from my New Jersey apiary. J. H. M. Cook,
1Atf 84 Cortland St., New York City.

PACKAGE BEES AND PURE ITALIAN QUEENS—Booking orders now for spring delivery. Circular free. J. E. Wing,
155 Schiele Ave., San Jose, Calif.

BOOK YOUR ORDERS for QUEENS now—Goldens, $2; tested, $3; banded, $1.50; tested, $2.50; six or more 10 per cent less.
Clover Leaf Apiaries, Wahoo, Neb.

1920 PRICES for "She Suits Me" queens. Untested Italian queen, from May 15 to June 15, $1.50 each. After June 15, $1.30 each; $12.50 for ten; $1.10 each for 25 or more.
Allen Latham, Norwichtown, Conn.

"QUALITY" THREE-BANDED ITALIANS from excellent stock; untested queens, 1, $1.50; 6 for $7.50; 12 for $13.50; 50 for $55; 100 for $100. N. J. James,
1186 Bird Ave., San Jose, Calif.

HIGH GRADE ITALIAN QUEENS—Send for catalog.
Jay Smith, R. 3, Vincennes, Ind.

BEES BY THE POUND, ALSO QUEENS—Booking orders now. Free circular gives prices, etc. See larger ad elsewhere.
Nueces County Apiaries, Calallen, Texas,
E. B. Ault, Prop.

## HONEY AND BEESWAX

Lower Price. Top Quality. Atwater's Honey.

FOR SALE—Choice clover extracted honey, $21.60 per case of two 60-lb. cans. For large quantities, write for prices.
J. D. B..ls, Oto, Iowa.

FOR SALE—Amber honey, 2 60-lb cans per case, 16c per pound; less in 10-case lots.
Arthur Knerston, Shreveport, La., Gen. Del.

FOR SALE—6,000 lbs choice clover and basswood honey in 60-lb. cans, packed 2 to the case. Give me an offer.
Rowen Grebin, Preston, Minn.

FOR SALE—Raspberry, basswood, amber and clover honey in 60-lb. cans, 2 per case, at 20c per pound. Also in 6 and 10-pound pails.
Julius Gentz, Wabeno, Wis.

EXTRACTED HONEY—We sell it in any quantity. Write for prices.
C. C. Clemons Produce Co.,
128 Grand Ave., Kansas City, Mo.

FOR SALE—Finest quality extracted honey in 60 lb. square cans 2 cans per case State how much you can use and I will quote you on same.
Angus M. Paterson,
212 E. 5th St., Flint, Mich.

NEW HONEY. NEW PRICES—Supply your customers, finest alfalfa-clover honey, extra strong cases, $11.60 for one 60-lb. can, $21.60 case of 2, all f. o. b. here. Write for prices large lots. Two carloads sold; plenty on hand.
E. F. Atwater, Box 37J, Meridian, Idaho.

FOR SALE—20,000 pounds of choice light amber honey, from Spanish needle and heartsease in new 60-pound cans and 6 and 10-pound pails. Write for price and sample. Please state how much you can use.
F. W. Luebeck, R. 2, Knox, Ind.

FOR SALE—White sweet clover extracted honey in new 60-pound cans, at 17c a pound f. o. b. Delta, Colo.
J. T. Hartford, Cedaredge, Colo.

FOR SALE—Well ripened extracted clover honey, 20c per pound, buckwheat and dark amber 17c, two 60-pound cans to case; clover extracted in 5-pound pails, $1.25; amber and buckwheat, $1 per pail, 12 pails to case, or 30 to 50 pails to barrel.
H. G. Quirin, Bellevue, Ohio.

WHOLESALE PRICES to beekeepers for their winter trade, alfalfa, sweet clover, extracted, 16c per pound in 60-pound cans.
Foster Honey & Merc. Co., Boulder, Colo.

FOR SALE—Finest white clover and basswood extracted honey in 60-pound cans.
Noah Bordner, Holgate, Ohio.

EXTRACTED HONEY—Fancy L. A. quality, 60-lb tin, 2 per case, 12c lb.; 10-lb. tin, 6 per case, 16c lb.; white 20c per lb. in 60-lb. cans.
Hoffman & Hauck, Inc., Woodhaven, N. Y.

FOR SALE—Sweet clover extracted honey in 60-lb. cans First premium at county and state fairs. Harry McCombs, Sterling Colo.

SOUTHERN AMBER HONEY — Two 60-lb cans to the case, 16c per pound.
Walter Reppert, Shreveport, La., Gen. Del.

FOR SALE—Choice white clover honey in 60-lb cans; none finer.
J. F. Moore, Tiffin, Ohio.

FOR SALE—Very fine quality basswood-milkweed (mostly milkweed) honey in 60-pound cans, P. W. Sowinski, Bellaire. Mich.

FOR SALE—Clover and buckwheat honey, either comb or extracted, at reduced prices; any style container. A postcard will bring our quotations. The Deroy Taylor Co.,
Wayne Co., Newark, N. Y.

FOR SALE—Honey of a basswood and clover grade, put up in 60-lb. cans, 18 cents per pound f. o. b. here; sample 20c.
W. M. Peacock, Mapleton, Iowa.

WANTED—Comb and extracted honey.
The L. H. Snider Apiaries, Auburn, Ind.

FOR SALE—Finest Michigan raspberry, basswood and clover honey in 60-lb. cans, 25c per pound. Free sample.
W. A. Latshaw Co., Clarion, Mich.

FOR SALE—Very choice grade of sweet clover extracted honey.
Thos. Atkinson, Cozad, Neb..

WANTED — Extracted honey. State how packed. Send sample, lowest cash price.
P. Outzen, White Bear Lake, Minn.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 6c a pound for wax rendering. Fred W. Muth Co.,
204 Walnut St., Cincinnati, Ohio.

## SUPPLIES

Lower Price. Top Quality. Atwater's Honey.

IN going over our stock we find some soiled articles, good for all practical purposes but hardly to be sent out as first-grade material. We offer these at reduced prices, as follows:

| | |
|---|---|
| 2 crates 5-1 sty. 8-frm. dovetailed hives, per crate | $15.00 |
| 4 crates 6-10 frame supers for 5⅜ extracting frames, empty, per crate | 2.75 |
| 2 crates 25 single tier ship. cases, with glass 4¼, per crate | 12.50 |
| 1 crate 50 ship. cases for 3⅝x5 sections | 20.00 |
| 1 crate 100 Hoffman frames | 6.00 |
| 1 crate 100 section holders | 4.50 |
| 6 crates 5 No. 1 Wisconsin supers, per crate | 3.50 |
| 1 crate 5 No. 1 10-frm. dovetailed supers | 5.00 |
| 3 crates 5 10-frm. supers for 4¼x4¾x1½ sections, per crate | 4.50 |
| 5 cases 24 24-oz. jars, per case | 1.50 |
| 7 cases 24 6-oz. jars, per case | .90 |
| 5 cases 25 6-oz. jars, per case | .80 |
| 1 No. 15 extractor | 35.00 |
| 1 No. 25 extractor, hand power | 60.00 |
| 1 Cook's Manual book, cloth bound | .75 |
| 1 Langstroth book, cloth bound | 1.25 |
| 2 Doolittle Queen Rearing, cloth bound, each | .50 |
| 1 Fifty Years Among the Bees | .75 |
| 1 Productive Beekeeping | 1.50 |
| 2 Practical Queen Rearing, each | .75 |
| 1 Miller's Thousand Answers | .75 |
| 1 Outapiaries | .75 |
| 1 American Honey Plants | 1.50 |
| 2 Wright wiring devices, each | 2.00 |
| 2,000 4¼x1⅞ 3 si. split sections, per thousand | 12.00 |
| 10 Thale bee feeders, each | .35 |
| 5 No. 4 8-frm. dovetailed supers | 4.00 |
| 6 10-frm. Lang. Simplicity supers | 3 50 |
| 5 No. 2 10-frm. Tri-State supers | 4.00 |
| 6 10-frm. Tri-State extracting supers | 4.00 |

Write today, sending cash with order.
Dadant & Sons, Hamilton, Ill.

GOING CHEAP—50 eight-frame and 60 ten-frame standard dovetailed hives, complete with Hoffman metal-spaced frames, covers and bottoms, all in the flat, at $2.75 apiece; in any amount, from one to fifty; cash with order.
Paul D. Roban, Waverly, Minn.

FOR SALE—We have recently transferred 50 colonies of bees from old-style American hives with 12x12 frames. The discarded hives are in good shape, well painted and would be desirable to anyone having this size hives. We offer the empty hives at $1.50 each, if all are taken in one lot. Write for further particulars.
Dadant & Sons, Hamilton, Ill.

FOR SALE—3,000 comb-honey supers for 4x5 section, nailed and painted; run in clean yards; are practically as good as new. Also, 4,000 Airline shipping cases; also nailed, corrugated paper for same; also 40,000 grooved sections with full sheets of foundation for same. This is all A1 stuff and prices away down. L. A. Coblentz, Rigby, Idaho.

ROOT'S GOODS at Root's prices.
A. W. Yates, Hartford, Conn.

SPECIAL 5-GAL. CANS—Have 300 cases left, perfect California used 5-gal cans, 2 to case, heavy wood, large screw-cap cans. Will close out to first buyers 60c case. Order quick.
Hoffman & Hauck, Inc., Woodhaven, N. Y.

FOR SALE To reduce stock, crates of 96 1 gallon cans, with bails and 3-inch screw caps, at $17.60 per crate, f. o. b. Grand Rapids.
A. G. Woodman Co., Grand Rapids, Mich.

FOR SALE—One-pound jars in two doz. cases, ten cases or more at $1.75 per case, f. o. b. factory.
A. G. Woodman Co., Grand Rapids, Mich

FOR SALE—Good second-hand double-deck comb honey shipping cases for 4¼x4¼x1⅞ sections, 25 cents per case, f. o. b. Cincinnati; terms cash with order.
C. H. W Weber & Co.,
2146 Central Ave., Cincinnati, O.

FOR SALE—Good second-hand empty 60-lb. honey cans, two cans to the case, at 60c per case, f. o. b. Cincinnati. Terms cash with order. C. H W Weber & Co.,
2146 Central Ave., Cincinnati, O.

SEND us a list of goods wanted and will quote you lowest prices. We are the money-saving house. Price list free. Try us.
H. S. Duhy & Son, St. Anne, Ill.

## WANTED

Lower Price. Top Quality. Atwater's Honey.

WANTED—Second-hand extractor.
Dr. Smith, Villisca, Iowa.

WANTED—Three to five thousand lbs. of choice or light amber honey. Mention how packed. Send sample and lowest cash price.
H. C. Wittmann, Lincoln, Neb

BEES WANTED—100 strong, healthy Italian colonies in standard hives. Address,
A. L. Foster, 1209 W. Forest Ave.,
Detroit, Mich.

WANTED—A good honey location and bee outfit.
Delbert Lhommedieu, Colo, Iowa.

WANTED—Back numbers of Gleanings in Bee Culture, from January, 1899, to June, 1920.
W. H. Humphries, Midvale, Va.

WANTED—Migratory C. I. Graham can handle carload of healthy bees in 1921 season. Three hundred double colonies for extracted honey on share basis, fifty-fifty. Ship to Southern California Sage Belt, where I have produced 300 pounds of water-white sage honey per colony in May and June. Then shipped to later field for second and third crops. Winter address, Durham, Butte County, California.

WANTED—White clover honey, 60 pounds and up. Address,
Frank Coyle, Penfield, Ill.

I BUY and sell bees. If you have one colony or more, write
Frank Coyle, Penfield, Ill.

WANTED—To correspond with parties having bees in 10-frame standard hives that will lease them on shares. Will give good contract and have a good southwest Iowa location.
W. A. Jenkins,
144 Simmons St., Galesburg, Ill.

WANTED—Bees, with or without location.
F. W. Pease,
1717 Blake Boulevard, Cedar Rapids, Ia.

WANTED—Beeswax, old combs and cappings for rendering on shares. Also wax accepted for trade. Top market prices offered.
A. I. Root Co., Council Bluffs, Iowa.

WANTED—White extracted honey of fine quality. Write us what you have, and price.
Longfellow Bros., Hollowell, Maine.

WANTED—Disease-free bees, beehives, brood-combs and other bee "fixings." What have you? Lloyd W. Smith, Madison, N. J.

WANTED—Beeswax. At present we pay 36c per pound in cash and 38c in trade for clean, yellow wax, delivered Denver.
The Colorado Honey Producers' Association,
Denver, Colo.

WANTED—Second-hand hives, standard 10-frame. Dr. Smith, Villisca, Iowa.

WE BUY HONEY AND BEESWAX. Give us your best price delivered New York. On comb honey state quantity, quality, size, weight per section and sections to a case. Extracted honey, quantity, quality, how packed, and send sample. Charles Israel Bros. Co., 486-460 Canal St., New York City.

WANTED—Extracted honey, also comb honey, beeswax and maple syrup. State how packed. Paul Thomae, 1131 3rd St., Milwaukee, Wis.

WANTED Your order for "Superior" Foundation. Prompt shipments at right prices. Superior Honey Co., Ogden, Utah.

WANTED—Your old combs, cappings and slumgum to render into beeswax. We get enough more wax with our well equipped presses to pay for our work. Dadant & Sons, Hamilton, Ill.

## SITUATIONS

Lower Price. Top Quality. Atwater's Honey.

WANTED—Two comb-honey men for season of 1921. Give experience, age, and wages expected. B. F. Smith, Jr., Fromberg, Mont.

WANTED—Two helpers, one with experience, to begin March, for 700 colonies of bees. Give age, experience, wages wanted, recommendations, etc. Can sell an apiary so you can work it out. May lease all after August. El Centro, Calif., Box 2, R. F. D. 1.

WANTED—Young man by year, to begin at once to sell honey and work with bees. Sate experience and wages. Students Bee & Honey Co., Berkeley, Calif.

WANTED—Will give experience and fair wage to active young man not afraid of work, for help in large, well-equipped set of apiaries for season starting April. State present occupation, weight, height, age and beekeeping experience, if any. Morley Pettit, The Pettit Apiaries, Georgetown, Ont.

WANTED—Position with good bee man in Texas. Have had experience. Wife and 14-year-old boy also like to work with bees and chickens. Ready to work by February. J. H. T. Meurer, 516 S. 8th St., Fredonia, Kan.

WANTED—Beekeeper with some experience, for work in our apiary on Key Biscayne during the season of 1921, to begin February 1, under the direction of C. E. Bartholomew, who was formerly with the Department of Agriculture. Hugh M. Matheson, 1608 Avenue G, Miami, Fla.

WANTED—One or two good queen-rearing men to begin work February 15, 1921. Nueces County Apiaries. Calallen, Texas.

## FOR SALE

Lower Price. Top Quality. Atwater's Honey.

FOR SALE—"Superior" Foundation (Weed process). Quality and service unexcelled. Superior Honey Co., Ogden, Utah.

FOR SALE—Cedar or pine dovetailed hives; also full line of supplies, including Dadant's foundation. Write for catalog. A. E. Burdick, Sunnyside, Wash.

FOR SALE—Fifty 8-frame hive-bodies at a bargain. P. W. Sowinski, Bellaire, Mich.

FOR SALE—100 8 and 10-frame hives, Root and Wilder make, part painted, with half-depth supers, with shallow frames; only used this season. No disease here. Am changing to long idea hive, reason for selling. Price $200 for the lot, or $2.25 each. A. Irish, Doctortown, Ga.

FOR SALE—Custer Battlefield Apiaries. I will sell my 200 colonies of bees, with a full outfit for extracted honey, house and 6 acres of land, quarter mile from Hardin. If interested, write me. S. F. Lawrence. Harlin, Mont.

FOR SALE—White sweet clover seed, hulled, 20 cents per pound. Will Gavin, Lake Arthur, New Mexico.

FOR SALE—40-acre farm, 10 acres timber; nice home; 1 mile from R. R. station; ideal place for bees and poultry, $3,200. Additional land if wanted. Write for particulars. H. J. Koopman, Falmouth, Mich.

FOR SALE—160 colonies in two-story 8-frame hives, best combs, $15 per colony; good condition April 1. Some equipment half catalog price. This will not appear again. Daniel Danielson, Brush, Colo.

FOR SALE—Biennial sweet clover; white 25c; yellow 20c pound; makes finest of stock and bee pasture. Inoculation $1 for bushel seed; samples. Elmer Fraser, Maryville, Mo.

ALABAMA Farm, especially adapted to BEES. Mild climate, long flowering season, variety of crops; BARGAIN. Owner, 169 Uhland Terrace, Washington, D. C.

## MISCELLANEOUS

Lower Price. Top Quality. Atwater's Honey.

GRANULATED HONEY SLIPS—100, 20c. Dr. Bonney, Buck Grove, Iowa.

GINSENG and 200 other roots and herbs for making medicine, perfume and dyes; how to gather. Address of buyers that pay top prices. Book only 30c. O. Twitchell, Box 9 W. Milan, N. H.

WILL EXCHANGE Barnes saw, No. 1 condition, for Hershiser wax press or 16-ga. hammerless double gun, or offers. Enclose stamp. A. D. D. Wood, Lansing, Mich.

OLD-TIME BEE BOOKS—50 to 250 years old. Every beekeeper should own at least one. Send for price list. John E. Miller, 53 S.; 1810 Weeks Ave., New York City.

DR. MILLER'S BEE SONGS are in "Songs of Beedom.' Ten songs for 20 cents, postpaid; 2-cent stamps taken. Also Teddy Bear souvenir postal cards, 10 for 10 cents. Address Geo. W. York, Box 84, Spokane, Wash.

SELL YOUR WARES with sign-boards, the silent salesmen. Place now to sell next year's crop with them. Signs made to order. Prices reasonable. Satisfaction guaranteed. Investigate. H. A. Schaefer, Osseo. Wis.

**QUEENS**

Write for our catalog of high grade Italian Queens. Pure mating and safe arrival guaranteed.

Prices for 1921:

| | |
|---|---|
| 1 to 4 inclusive | $ 3.00 ea. |
| 5 to 9 inclusive | 2.90 ea. |
| 10 or more | 2.80 ea. |
| Breeders | 12 00 ea. |

**JAY SMITH ( Route Three ) Vincennes, Ind.**

**THAGARD'S ITALIAN QUEENS**

Bred for quality. My Three-banded queens are bred from imported stock; they are hardy, prolific, gentle, disease-resisting and honey producers. They are superior. Try them and be convinced. Book your orders now for spring delivery.

Untested, 1, $2; 6, $8; 12, $15. Tested, 1, $3; 6, $16; 12, $28.
Select untested, 1, $2.25; 6, $10; 12, $18. Select tested, 1, $5; 6, $26; 12, $50.

BEES BY THE POUND AFTER MAY 1

One pound, $4; two pounds, $7.
Hybrid bees—One pound, $2.25; two pounds, $4. Add price of queen wanted.
Lots of ten or more packages, 10 per cent discount.
Safe arrival, pure mating and perfect satisfaction guaranteed. Circular free.

**V. R. THAGARD, Greenville, Ala.**

**Italian Bees by the Pound in Packages**

**GOLDEN QUEENS** **3-BAND QUEENS**

We are better prepared than ever before to handle a large demand for both queens and bees by the pound. Let us send you one of our 1921 circulars and late price lists. We are now booking orders almost daily for next spring delivery. Let us book your order now. so as to assure prompt delivery when the bees or queens ar wanted. Only a limited number of orders will be accepted for booking, as we are absolutely determined to take only as many orders as we can handle absolutely on time.

**M. C. BERRY & COMPANY, Hayneville, Ala., U. S. A.**

# Quality Bee Supplies

FROM A

# Reliable House

Without fear or favor, I place my BEE WARE and SERVICE before you.

It is the small annoyances that often grow into disastrous results. Avoid the so-called "little losses" by using MONDENG'S GOODS.

Quality is first—save time when you put your goods together, by getting supplies that are accurately made. Service is next—no delays when bee supplies are ordered from my factory.

I am ready to meet your urgent needs.

Send for my new price list.

Closing out all Langstroth and Wisconsin hives and supers. Also Langstroth triangular top-bar frames and eight-frame D. T. supers for 4x5 sections. Will sell at cost price. Write for quotations.

**CHAS. MONDENG**

**146 Newton Ave. N. and 159 Cedar Lake Rd. Minneapolis, Minn.**

# ITALIAN QUEENS

BOOKING ORDERS NOW FOR 1921. QUEENS READY APRIL 1

My Italians are of an exceptionally vigorous and long-lived strain of bees. They are gentle, prolific, very resistant to foulbrood, and the best of honey gatherers. I have sold a good many queens to parties who are using them in stamping out foulbrood. Will book orders for one-fourth cash, and the balance just before delivery. Will guarantee safe arrival in the United States and Canada.

PRICES FOR APRIL, MAY AND JUNE

| | 1 | 6 | 12 | | 1 | 6 | 12 |
|---|---|---|---|---|---|---|---|
| Untested | $1.50 | $8.00 | $15.00 | Tested | $2.50 | $12.50 | $24.00 |
| Select untested | 1.75 | 9.00 | 16.00 | Select tested | 3.00 each. | | |

No nuclei or pound packages of bees for sale.

Descriptive circular and price list free.

**JOHN G. MILLER**

**723 C. ST., CORPUS CHRISTI, TEXAS**

# FOR SALE

## IF YOU WANT THE CHEAPEST, BUY THE BEST

I am prepared to furnish for the season of 1921 twenty-five hundred two and three nuclei of my bright 3-banded Italian bees, headed with young, vigorous queens. These bees are free from disease and safe arrival guaranteed. Hoffman frames wired and on full sheets of foundation; very few combs over two year sold. I am booking orders now, with first payment to be made February 1, 1921, unless purchaser wishes to make a payment with order.

Two-frame, $4.25; three-frame, $5.25. If queens are wanted add $1.25 each.

**A. B. MARCHANT, Jesup, Ga.**

**Reference: Merchants and Farmers Bank of Jesup.**

# PAINT WITHOUT OIL

**Remarkable Discovery that Cuts Down the Cost of Paint 75%**

**A Free Trial Package is Mailed to Everyone Who Writes**

A. L. Rice, a prominent manufacturer of Adams, N. Y., discovered a process of making a new kind of paint without the use of oil. He named it Powdrpaint. It comes in the form of a dry powder, and all that is required is cold water to make a paint weather proof, fire proof, sanitary and durable for outside or inside painting. It is the cement principle applied to paint. It adheres to any surface, wood, stone or brick, spreads and looks like oil paint and costs about one-fourth as much.

Write to A. L. Rice, Inc., Manufacturers, 23 North St., Adams, N. Y., and a free trial package will be mailed to you, also color card and full information, showing you how you can save a good many dollars. Write today.

PAT JULY 30, 1918

## C. O. BRUNO NAILING DEVICE

*Made for the Huffman Brood Frames.* **A combined Nailing, Wiring and Wedge Clamping Device. Has been tried and is guaranteed to do accurate work.**

**PRICE $7.50**

**Complete directions for operating are furnished with each device.**

**Manufactured by C. O. BRUNO**
**1413 South West Street, Rockford, Illinois**

# Illinois Beekeepers

Become a member of the State Association. If you pay the dues of $1.75 you become a member, get a years' subscription to your choice of bee journal and cloth-bound copy of the annual report issued every fall.

**G. M. WITHROW, Secy.**
**Mechanicsburg, Ill.**

**ATTENTION, PACIFIC NORTHWEST BEEKEEPERS!**

We handle a full line of supplies for beekeepers, including **Italian Queens.** Write us your requirements and for our Catalog A. It's **free.**

SPOKANE SEED CO.,
906 First Ave. Spokane, Wash.

# BEST GOLDEN ITALIANS

**BEN G. DAVIS, SPRING HILL, TENN.**

BINDING FOR BEEKEEPERS

We do all kinds of book binding, such as magazines like the "American Bee Journal," or any other publication. Also make any style blank book, either printed or unprinted heading.

**LUTZ & STAHL, Keokuk, Iowa**

**NOW IS THE TIME**

When the market is slow is the time to push local sales by means of well-placed advertising. Our line of honey labels is the finest in the market. If you have not yet received a copy of our catalog, send for one today.

**CALENDARS, PLACARDS**

We are prepared to furnish the queenbee in color like the one on this month's cover, either as a placard or a calendar. These are printed on white enameled cardboard 7x11 inches in size. Price, with your advertisement printed thereon, $2 per dozen, or $11 per hundred, postpaid.

We also have the children's doll party, little girls eating honey, on similar enameled cardboard, 9x11 inches, in either calendars or placards, at $2 per dozen, or $11 per 100. Make your advertisement brief, as it can be read more readily without too much printing.

**AMERICAN BEE JOURNAL, Hamilton, Ill.**

**Boyer's "Quality-First" Tin Honey & Syrup Containers**

are the best and cheapest in the long run.

Prompt shipments of all standard sizes and styles.

**Can manufacturers since 1892. Large Capacity**

If you cannot secure them from your usual supply house, write us your needs.

**W. W. BOYER & CO., Inc.**
2327-2329 BOSTON STREET
BALTIMORE, MD.

**We have obtained a large amount of 1 pound glass jars that we can offer at $6.85 per gross, F. O. B., Newark, N. Y.**

**Friction Top Pails all ready for delivery at Newark, New York**

| | | |
|---|---|---|
| 2½ | pound cans, f. o. b..... | $ 6.50 per hundred |
| 3 | pound cans, f. o. b..... | 7.00 per hundred |
| 5 | pound pails, f. o. b..... | 10.70 per hundred |
| 10 | pound pails, f. o. b..... | 16.00 per hundred |

The above prices are f. o. b. Newark, of $1 per hundred less f. o. b. Baltimore, Md.

**Now is a fine time to gather up your old combs and ship them in for rendering. Write for our terms and shipping tags. Highest cash prices paid for beeswax, or we will change your wax for foundation.**

We have in reserve a complete line of bee supplies which we can quote you attractive prices on. We also have some special offers to make on 8-frame hives, bottom-boards and covers.

Send in your list of requirements and let us quote you on same.

**Address THE DEROY TAYLOR CO., Newark (Wayne Co.), N. Y.**

**FRICTION TOP PAILS---GLASS HONEY CONTAINERS**

2½ pound pails in 2 doz. shipping crates.
2½ pound pails, 200 per crate.
5 pound pails, 100 per crate.
10 pound pails, 100 per crate.

18 oz. screw cap glass honey containers, 1 doz. per case—fibre shipping cases.
We also carry a full line of Lewis supplies. Send list of your needs, or requests for catalog, to

**DEPARTMENT B**

**WESTERN HONEY PRODUCERS, SIOUX CITY, IOWA**

## BEEKEEPERS

Place your order for supplies NOW and take advantage of the Early Order Cash Discount, 5 per cent for December, 4 per cent for January. Our stock of Standard Hives, Supers, Hive Bodies, Brood Frames, Foundation and all other Standard Goods is complete. "If you want the Cheapest, buy the Best."

Our aim is to give prompt service, highest quality and Guaranteed satisfaction to our customers. Send us a trial order. We feel confident you will be satisfied.

Our annual catalog will be ready for mailing January, 1921. It's free for the asking.

**AUGUST LOTZ COMPANY, Boyd, Wisconsin**

# BEE SUPPLIES

We are prepared to give you value for your money. Our factory is well equipped with the best machinery to manufacture the very A-best supplies that money can buy. Only the choicest material suitable for bee hives is used. Our workmanship is the very best. Get our prices and save money.

**Eggers Bee Supply Mfg. Co.**
**Incorporated**
**ROUTE 1, EAU CLAIRE, WIS.**

**SELL YOUR CROP OF HONEY TO**

## HAUFMAN & HAUCK, Inc.

**WOODHAVEN, N. Y.**

No lot too large or small, and purchase your containers. Prompt shipment.

| | | | | | |
|---|---|---|---|---|---|
| 2½-pound pails, | case | 2 doz., | $1.90 each; | crate 100, | $ 7.25 |
| 5-pound pails, | case | 1 doz., | $1.80 each; | crate 100, | $11.00 |
| 10-pound pails, | case | ½ doz., | $1.60 each; | crate 100, | $17.50 |
| 5-gal. cans, used 2 to case, 60c case. | | | | | |

**White Flint Glass Jars, Screw Caps—**

| | |
|---|---|
| Quart honey, 3-lb. size, 1 doz cartons | $1.25 eacr |
| 1-lb. size, 2 doz. cartons | $1.70 each |
| ½-lb. size, 3 doz. cartons | $2.00 each |

## PORTER BEE ESCAPE SAVES HONEY TIME MONEY

PORTER
BEE ESCAPE
PATENTED

**For sale by all dealers.**
**If no dealer, write factory**
**R. & E. C. PORTER, MFRS.**
**Lewistown, Illinois, U. S. A.**
(Please mention Am. Bee Journal when writing)

## HONEY FOR SALE

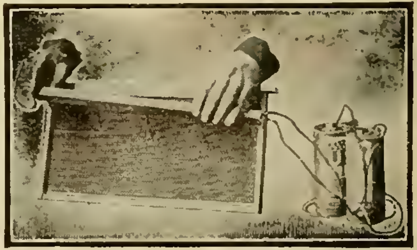
We have New York State light honey, 2 60-lb. cans in a case. Price on application.

**I. J. STRINGHAM, Glen Cove, N. Y.**
**NASSAU, CO.**

## BARNES' FOOTPOWER MACHINERY

Read what J. E. Parent, of Chariton, N. Y. says: "We cut with one of your Combined Machines last winter 50 chaff hives with 7-in. cap, 100 honey-racks, 500 frames and a great deal of other work."

**W. F. & JOHN BARNES**
**995 Ruby St., ROCKFORD, ILLINOIS**



## ELECTRIC IMBEDDER

**Price without Batteries $1.50**
Not postpaid.

Actually cements wires in the foundation. Will work with dry cells or with city current in connection with transformer. Best device of its kind on the market.

**For sale by all bee supply dealers**

**Dadant & Sons,** Manufacturers HAMILTON, ILL.

## BEE SUPPLIES

We carry a complete stock of supplies at all times, and can make prompt shipments. Our prices will interest you.

**Send Us Your Inquiries**
**A. H. RUSCH & SON CO.**
**Reedsville, Wis.**

**Place Your "falcon" Order Early**

DELIVERIES will be more certain; everything will be on hand ready for spring. Special discount to early buyers.

INCLUDE an Ideal Bee Veil in this season's supplies. Made of light weight indestructible wire and strong cloth. Will not blow in your eyes or stick to your face.

**"falcon"** bees and bee supplies are guaranteed to give absolute satisfaction. Send for our red catalog.

**W. T. FALCONER MANUFACTURING CO.**
**FALCONER (Near Jamestown) N. Y., U. S. A.**

*"Where the Best Bee Hives Come From"*

SEEDS
GARDEN & FIELD SEEDS
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HONEY
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**Wishing all a Merry Christmas and a Happy New Year**

**C. H. W. WEBER & CO.**
**CINCINNATI, OHIO**

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**FOREHAND'S QUEENS. They Satisfy, Why?**

Because of 28 years of experimental work with both queen breeding and honey production.

With breeding and selecting of imported queens, I have reached a standard which is ideal. Queens as good, but none BETTER. Why experiment? Take advantage of the life experience of my breeders.

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We are ready to serve you at all times, whether you desire queens or advice. Let us help you with your bee problems. All questions are cheerfully answered.

I breed three-band Italians only.

November 1 to June 1.

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| Untested | $2.00 | $ 9.00 | $16.00 |
| Selected Untested | 2.25 | 10.50 | 18.00 |
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Orders booked now for spring delivery. One-fourth the full amount with order and balance when shipment is desired. Pure mating, safe arrival and satisfaction guaranteed. Write for circular and large order discounts. Shipment to foreign countries at receiver's risk

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**BEEKEEPERS** WE MANUFACTURE DOVETAILED HIVES, HOFFMAN FRAMES, SECTIONS AND SHIPPING CASES

Our hives are made of best grade White Pine, cut accurate and smooth to standard measure, sections are made of Basswood polished on both sides. There are no better made.

We carry a complete line of everything used in the apiary. Our shipping facilities are as good as can be found anywhere. We want your business. We guarantee prompt and satisfactory service. Price list free.

**ARSHFIELD MANUFACTURING COMPANY, Marshfield, Wis.**

**FOR YOUR WINTER TRADE**

**HONEY**

**WHOLESALE PRICES**

**16c** PER POUND EXTRACTED HONEY SIXTY POUND CANS

**F. O. B., BOULDER, COL.**

NOTE:—This Honey will be granulated, finest quality white alfalfa—sweet clover honey, this years production

**COMB HONEY**
**Crates of 8 Cases. 24 Sections**

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| Fancy | $7.50 |
| Number One | 7.25 |
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THE **FOSTER HONEY** & Merc. Co.
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A NEW BEE BOOK
"Dadant's System of Beekeeping"
Price $1.00.

ANOTHER NEW BOOK

**BEEKEEPING IN THE SOUTH**

BY KENNITH HAWKINS

There is a general demand for a book giving detailed information relating to beekeeping conditions in the South. Kennith Hawkins, as a beekeeping specialist for the United States Department of Agriculture, visited all the Southern States and has made a special study of the characteristics of this region. This is not a text-book of beekeeping, but rather a book of information about a great region where beekeeping offers exceptional possibilities and where there is a great variation of the climate and flora of different sections. Illustrated with many photographs. Mailing weight one pound. Price $1.25.

**AMERICAN BEE JOURNAL, Hamilton, Illinois**

**FOR SALE 1000 NUCLEI ITALIAN BEES WITH QUEENS**

I am offering to the trade for the season of 1921, 1,000 nuclei Italian bees with pure mated Italian queens. My combs are built from full sheets foundation in Hoffman frames; prices as follows:

**Prices on Nuclei with Untested Italian Queens**

Two-frame nuclei, $5.50 each; 25 or more, $5.00 each.
Three-frame nuclei, $6.50 each; 25 or more, $6.00 each.

**Price on Italian Queens**

Untested queens, $1.50 each, $15.00 per dozen; 25 or more, $1.00 each.
Tested Italian queens, $2.50 each, $25.00 per dozen; 25 or more, $1.75 each.

I am booking orders now and will be glad to have your order or part of same. I shall be ready to make shipments April 15, and assure you prompt attention, and orders filled when promised, or money returned. I guarantee safe arrival, no disease in any of my yards.

**SOUTH GEORGIA APIARIES** W. T. DONALSON Proprietor **Hebardville, Ga.**

**MR. BEEKEEPER—**

We have a large plant especially equipped to manufacture the supplies that you use. We guarantee all materials and workmanship. We ship anywhere. We allow early order discounts and make prompt shipments. *Write for free illustrated catalog today*

**LEAHY MFG. CO., 90 Sixth Street, Higginsville, Missouri**

**J. W. ROUSE, Mexico, Missouri** **A. M. HUNT, Goldthwaite, Missouri**

# Crop and Market Report

**Compiled by M. G. Dadant**

For our January market page we asked the following questions of our contributors:

1. How much honey remains on hand in your section?
2. How is the demand? Local? Wholesale?
3. At what price is honey being offered? At what price sold?
4. How did bees go into winter quarters?

## HONEY ON HAND

There seems to be very little honey left in the New England States and the bulk of the crop has moved in New York and Pennsylvania, except with some of the large producers, who have from 20 to 50 per cent on hand. Practically the whole crop seems to have moved in the Southeastern States, and at fair prices. In Texas there is not a great deal of honey left, probably 10 to 20 per cent would cover it. The Central States, including the States of Ohio, Indiana, Illinois, Iowa, Missouri Kansas and Nebraska, have disposed of a majority of their honey in a retail way. There are, of course, still a number of large producers who are holding a part of their crop, but there seems to be no inclination to a very large drop in prices to dispose of it. In Michigan practically all the small producers have sold their crop and some of the large producers are out. A majority of the big beekeepers, however, have probably 50 per cent or more of their honey on hand. The same is true in Wisconsin and Minnesota. There are varying reports from Colorado and the Inter-mountain States. Probably a majority of the beekeepers within the Association have disposed of their honey, especially the combs.. Throughout the whole territory there is possibly 30 to 50 per cent left in the hands of the producers. In Montana honey has moved very well and there is probably not 20 per cent of the crop left. The Idaho crop seems to have moved a little slower, as did that of Utah and Nevada. Washington and Oregon seem to be cleaning up pretty well on their honey. The reports from California are conflicting. Some of the large beekeepers have disposed of their entire crop, others have from 25 to 40 per cent on hand. The Association there is making an extensive campaign and should have no trouble in disposing of the output of its members.

## DEMAND FOR HONEY

Throughout the whole country the wholesale and jobbing demand for honey seems to be still slow, with probably considerable improvement over when our last report was written.

Throughout the eastern half of the country the retail demand is good and those who have made any campaign for pushing the local sales have gotten rid of their honey without difficulty. Within the last week or ten days there seems to have been a quickening of the demand on the part of the wholesalers. This is probably due to the fact that retailers are asking for holiday stocks and as the wholesalers' holdings are light, it is necessary for them to restock.

## PRICES OF HONEY

The honey price is holding up very well. The lowest prices suggested by any of the reporters was 16c for white honey, and many have written that they have disposed of their crop at from 18 to 20c. There were one or two suggestions that a drop of 25 per cent over last year's price might be necessary in order to dispose of the bulk of the crop.

Texas honey is selling for 14 to 16c for extracted. Other southern honey seems to be moving at about the same figure, with a tendency to cut the price 2c or more in order to make quick sales.

One Iowa reporter suggests he will let loose of the balance of his honey for 19c for extracted and 6.50 per case for comb. The majority of reports, however, suggest a wholesale price of 20c per pound for best white extracted honey.

The honey of the Inter-mountain territory is mostly extracted, practically all the comb having been disposed of. Most of this honey is being held at a price of from 17 to 20c per pound for the best white extracted, with a few sugestions on the part of the large producers that they would accept 12c for amber and 15c for white to dispose of their whole crop.

One of the Idaho reporters suggested 15c for carload lots of white honey, whereas practically all reporters from Montana desired a higher price, approximately 18c for extracted and $7 per case for comb.

The California Association is holding to its prices, based at about 14c to 18c, depending on the grade.

## CONDITION OF THE BEES

There is a remarkable unanimity on the part of all reporters in stating that bees are in excellent shape and should winter very well through having large amounts of stores and plenty of young bees. Usually at this time of year there are many reports of colonies going into winter short of stores, but the fall of 1920 seems to have been especially good for filling up the brood-chambers of the colonies. There is also the fact that the beekeepers were able to obtain sugar more readily and feed more plentifully.

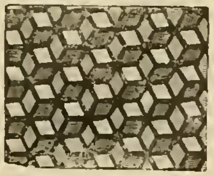
## SUMMARY

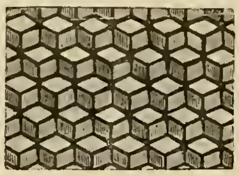
The California Association has just put on a big campaign for honey-selling, with considerable advertising, and feel that they should have no difficulty in disposing of their crop at the prices they have been asking. Although there is a slight tendency on the part of some beekeepers to cut the price to make sales, the general inclination on the part of all is to hold for a price of at least 15 to 16c for white extracted honey, with 2 to 3c per pound less for amber. Some sales are reported for amber honey as low as 10 to 11c in carload lots. It seems that the honey crop should move fairly well at remunerative prices, providing some section of the country does not break the market by offering large lots at a very low price. This might necessitate other communities also unloading with a very demoralizing influence on the general honey market. There has been very little cold weather, so far, and therefore the honey demand has not been so large as it would have been with a hard winter. One thing which has helped push the market down is the fact that there are large quantities of West Indian honey coming into the different ports. We have an offer of West Indian honey put up in 50-gallon new gumwood barrels at 75c per gallon f. o. b. New York. This is a price of less than 7c per pound. Of course this is a very inferior honey, probably which cannot rank with any of our domestic product. Still it can be used in certain lines to compete with our amber honey and, therefore, it has a depressing influence on the market. We can see no reason for demoralization at present, but conditions do suggest two things necessary. One is that the beekeepers will have to push harder on local sales, and those who are sold out should deem it their duty to buy more honey to help reduce the supply. The other necessstiy is for some thorough advertising campaign caried out co-operatively, which will bring honey before the people and create a demand. When we realize what a small amount of honey is used per capita in this country we can see that there would be no trouble in disposing of the whole of the present crop at excellent prices, with a proper marketing and advertising organization. The development of the Honey Producers' League should certainly be a great help.

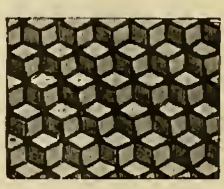
# AIRCO FOUNDATION WHY?

We are now beginning to get the beekeeper's own verdict on Airco Foundation, the new Root-Weed process, announcement of which we made a year ago.

We then told the beekepers that the new process had to do with both the refining of the wax and the milling of the wax sheets. We said that we believed that we had made one of the greatest of all improvements in the manufacture of comb foundation.







Today, with reports coming in from beekeepers who have now used this new foundation, we are sure that all the claims we have made for the Airco are fully proved. Let's have some of the testimony:

**BEES DRAW IT OUT SOONER**

"The bees accept it quickly; draw it out with less labor, and sooner. I have used over 200 pounds of Airco the past season."
Marietta, N. Y. J G. Burtis.

**SIMPLY PERFECTION**

"This foundation may be called the crown of all betterments in modern beekeeping. It is simply perfection. The fact is that we need nothing better, and I am convinced that it cannot be surpassed."
Sabanna, Brazil. Victor Jungers.

**FAR SUPERIOR TO ANY OTHERS**

"Airco Foundation is far superior to any other foundation that I have ever tried. The bees accept it at once, and draw it out into fine worker comb."
Lake Geneva, Wis. C. H. Gebhardt.

We have many such commendations for Airco Foundation. It is only praise that comes from the beekeepers, and so it is that we believe it to be the best comb foundation that has ever been made.

## WHY IT'S BEST

Airco Foundation is superior in these points: It is all made of high-grade wax and refined without the use of any acids or other injurious chemicals. By this new refining process, the wax retains its aroma, and the impurities are more perfectly eliminated than by any other process known. Most important of all, the new process of milling this superior wax gives a comb foundation nearer like nature's than any other made. The cell base is thinner and the walls deeper, for which reason the bees accept it sooner and draw it out more quickly than they do the old-process foundation.

We invite every beekeeper in America to make his own test of Airco Foundation this year. We shall be willing to abide entirely by the verdict to be rendered by the users of this far superior new foundation.

*Write for particulars and prices*

**THE A. I. ROOT COMPANY**
**MEDINA, OHIO**

# Lumber that Lasts?

CYPRESS RESISTS ALL ROT INFLUENCES

## Here's a Convincing Case of an Experienced Beekeeper who—

CYPRESS "THE WOOD ETERNAL"

**(But let the gentleman tell it himself:)**

*BUCK GROVE, IOWA, February 2, 1916.*

*"I have been a Cypress man for lo, these many moons. Almost all my dovetail hives are of Cypress, as are bottom-boards, and I think, shallow telescope covers. My hive stands are of Cypress, and stand in the mud and wet all the time and are as solid as when I got the first one some years ago. Cypress is a trifle heavier than white (cork) pine, but not much more than the heavier grade of pine now used. The fact thot it is 'everlasting' compensates for all this." (Signed) A. F. BONNEY, M. D.*

For a job of repairing or for equipment, the lumber that will give you the greatest real investment value in the market is Cypress, commonly known as the "Wood Eternal." This wood does not rot down like most woods; it lasts and lasts and LASTS, and LASTS and LASTS. It is the Gopher Wood of the Bible—Noah built his ark of Cypress. Since the days of Noah, Cypress has been famous for endurance under the most trying conditions. **Cypress is the one certified Greenhouse wood. That's "some" test. Bottom boards are another.**

## GET A BOOK—IT IS FREE

There are 42 volumes in the internationally famous Cypress Pocket Library, and each is authoritative in its field, and all are FREE. Vol. 1 is the U. S. Gov't Report on Cypress—that is a good authority, surely. Vol. 4 is the Barn Book, with plans and specifications for building. Vol. 36 is the Carpentry Book, making easy a dozen hard jobs of carpentry. Vol. 19 is the Canoe and Boat Book. Vol. 37 is the Silo Book. All are free for the asking. Suppose you ask for one or a dozen, right away.

## WORTH INVESTIGATING

This Cypress wood matter is worth investigating. Just write our "All-round Helps Department."

**SOUTHERN CYPRESS MANUFACTURERS ASSOCIATION**

1251 HEARD NATIONAL BANK BUILDING, JACKSONVILLE, FLA.

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FOR QUICK SERVICE, ADDRESS NEAREST POST OFFICE

# ALUMINUM HONEY COMBS

**STANDARD LANGSTOTH SIZE AVAILABLE NOW**

## PRICE PER COMB 60c

Ideal extracting supers, modified. Dadant and Jumbo Combs will be ready for delivery after February 1, 1921.

*Write for our new catalog containing full description and prices on*

**LEWIS BEEWARE**
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**ALUMINUM HONEY COMBS**

**TEXAS HONEY PRODUCERS ASSOCIATION**

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# Here to Serve You

*Why haven't you clipped this coupon?*

**At Council Bluffs, the focal center of western shipping facilities, where we can ship your order out over any one of eleven roads, saving you freight and valuable time.**

**And with a complete and guaranteed line of supplies. Allow us to quote on your needs, large or small. We are certain we can interest you and save you money. Try us.**

**Our business--quality goods, our code--service all the time.**

In making the announcement that this coupon would not only put our Service Department at the disposal of Western Beekeepers, but bring to them also the first three of our "LIVE TOPICS FOR LIVE BEEKEEPERS," we knew that many enthusiastic producers would respond. One writes: "I have faith in my business, and am on the lookout for new ideas and suggestions. Send me Topics." And another, in mailing the coupon, writes across the bottom of it: "Fine!" The general response has convinced us, therefore, that we are filling a want in this direction. As we desire to aid beekeepers in making their work 100 per cent efficient, we repeat the announcement with this word, "Why haven't you clipped this coupon?"

Watch the suggestions we list on the coupon, and when you note one that is of particular importance to you, mail it. Send it along today, if we can aid you in any way, or if you desire "Topics."

THE A. I. ROOT CO., Council Bluffs, Ia.
Gentlemen:

Please send me your circulars, "Live Topics for Live Beekeepers." And as I am interested in making the most of my honey production, I shall use your Service Department often. Just now I am particularly interested in:

____Wintering____Your New Airco Foundation
____Books that will make Beekeepiing more Interesting and Profitable.
____Marketing Crops____Plans for Spring Activities
I have ____colonies of bees in____frame hives
For your further information I wish to state that
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Name________________________________
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**The A. I. ROOT CO., Council Bluffs, Ia.**

# AMERICAN BEE JOURNAL

FEBRUARY, 1921

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**WHEN THE BEES STING** YOU'LL NEED AN IDEAL "BEE VEIL" TRUE TO ITS NAME. $1.95 POST PAID IN U. S. A.

**WAX—OLD COMB.** We pay the highest market price for rendered wax, less 5c per pound rendering charges. Our rendering process saves the last drop of wax for you. "Put your name on all packages."

**HONEY.** Send us a sample of your extracted honey. We also buy comb honey. Tell us how much you have and what you want for it. We pay the day shipment is received.

**THE FRED W. MUTH COMPANY, Cincinnati, Ohio**

*"THE BUSY BEEMEN"*

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**The Diamond Match Co.**
(APIARY DEPT.)
MANUFACTURERS OF
**Beekeepers' Supplies**
CHICO, CAL., U. S. A.

Dadant's incomparable Foundation is always kept in stock. Western Beekeepers can be supplied advantegeously.

BEEKEEPERS, wherever they may be located, before deciding where to obtain supplies, should write to The Diamond Match Co. for prices, and for their Beekeepers' Supply Catalogue.

This Company are the largest manufacturers in the world who make Bee Supplies. They own their own timber lands, mills and factories, and supply goods direct from the tree to the beekeeper.

Full advantage of this low cost of production is given to the purchaser.

The Apiary Department (which is in charge of experienced supply men, who are also practical beekeepers) maintains a constant excellence of product and offers unsurpassed service.

**The Diamond Match Co.**
Apiary Department CHICO, CAL., U. S. A.

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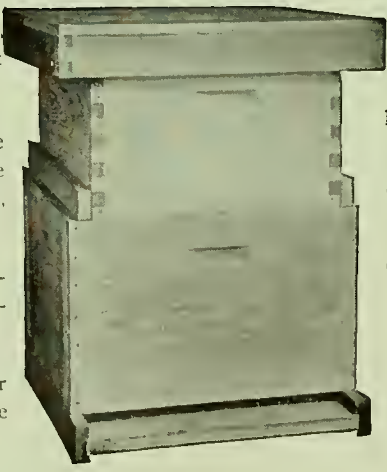
**MODIFIED DADANT HIVE**

Your present brood equipment can be put above the Modified Dadant hive used as full depth supers.

Features are: Deep frames, large one-story brood-nest, frame space ventilation, excellence in wintering, swarming easily controlled.

Glance at this illustration to compare this hive with "Standard" Langstroth hive.

You can get 40 per cent greater brood-comb area than in the "Standard" ten-frame Langstroth.



MODIFIED DADANT HIVE FEATURES

1. Eleven frames, Langstroth length, Quinby depth.
2. Frames spaced 1½ inches for swarm control.
3. Extracting frames 6¼ inches deep.
4. Dovetailed body, regular reversible bottom and metal roof cover with inner cover.
5. Langstroth "Standard" equipment easily used with this hive.

For free booklet write any distributor of Lewis "Beeware," or to

**G. B. LEWIS COMPANY, Watertown, Wisconsin**
**DADANT & SONS, Hamilton, Illinois**

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Every year, for 34 years, thousands of people have adopted Olds' Catalog as their farm and garden guide. The carefully tested and selected seeds it offers have produced heavy field crops and successful gardens everywhere. Customers have long since learned that

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Its descriptions, both in word and picture, are truthful in every respect. You can positively depend on garden, flower and field seeds, potatoes, plants and bulbs listed in this book being exactly as represented. All seeds conform to the strict Wisconsin seed laws. When you buy Olds' seeds, good yields are assured from the seed standpoint. You take no chances.

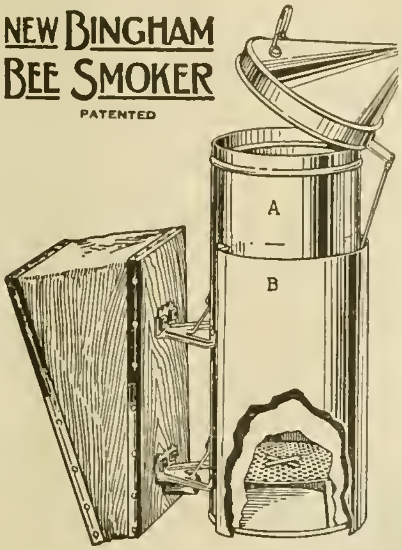
**Write for This Book Tonight**

A postal will do. But don't delay. Start right with right seeds.

**L. L. OLDS SEED COMPANY**
Drawer 000, Madison, Wis.

OLDS' CATALOG 1921

**NEW BINGHAM BEE SMOKER**
PATENTED



The Bingham Bee Smoker has been on the market over forty years and is the standard in this and many foreign countrie It is the all-important tool of the most extensive honey producers in the World. It is now made in five sizes.

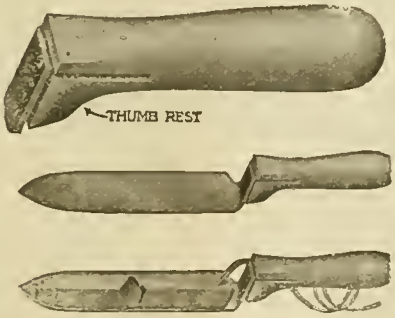
| | Size of stove inches | shipping weight lbs. |
|---|---|---|
| Big Smoke, with shield | 4 x10 | 8 |
| Big Smoke, no shield | 4 x10 | 3 |
| Smoke Engine | 4 x 7 | 2¼ |
| Doctor | 3½x 7 | 2 |
| Conqueror | 3 x 7 | 1¾ |
| Little Wonder | 3 x 5½ | 1½ |

The Big Smoke has just been produced in response to a demand for a larger-size smoker, one that will hold more fuel, require filling less often, from extensive handlers.

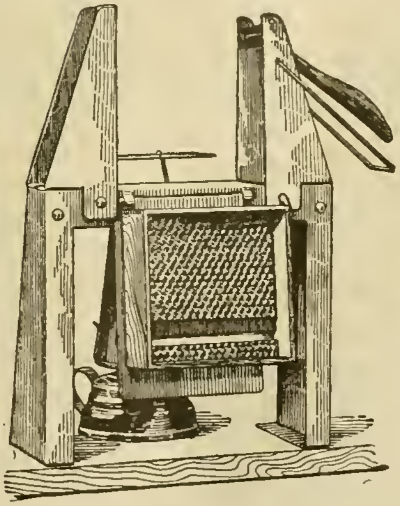
East Lansing, Mich., May 10, 1920.
A. G. Woodman Co., Grand Rapids, Mich.

Dear Mr. Woodman:—I have now had several weeks' opportunity to try out the New Smoker, called the Big Smoke, with the guard about the fire pot. The smoker is even more than I anticipated, and unless something else is brought out that is still better, you can be assured that this particular one will be standard equipment for this place from now on.

B. F. Kindig,
State Inspector of Apiaries.



The Genuine Bingham Honey Uncapping Knife is manufactured by us here at Grand Rapids and is made of the finest quality steel. These thin-bladed knives, as furnished by Mr. Bingham, gave the best of satisfaction, as the old timers will remember. Our Perfect Grip Cold Handle is one of the improvements.



The Woodman Section Fixer, a combined section press and foundation fastener, of pressed steel construction, forms comb-honey sections and puts in top and bottom foundation starters, all at one handling. It is the finest equipment for this work on the market.

TIN HONEY PACKAGES

2 lb. Friction top cans, cases of 24
2 lb Friction top can , crates of 612
2½ lb. Friction top cans, cases of 24
2½ lb. Friction top cans, crates of 450
5 lb. Friction top pails, cases of 12
5 lb. Friction top pails, crates of 100
5 lb. Friction top pails, crates of 200
10 lb. Friction top pails, cases of 6
10 lb Friction top pails, crates of 100

Ask for our special money-saving prices, stating quantity wanted.

**A. G. WOODMAN CO.**

**GRAND RAPIDS, MICH., U. S. A.**

Send us an itemized list of your requirements and let us figure on your goods for 1921. New catalog free for the asking.

## FOR SALE 1000 NUCLEI ITALIAN BEES WITH QUEENS

I am offering to the trade for the season of 1921, 1,000 nuclei Italian bees with pure mated Italian queens. My combs are built from full sheets foundation in Hoffman frames, prices as following:

**PRICE ON NUCLEI WITH UNTESTED ITALIAN QUEENS**

Two-frame nuclei $5 each, 25 or more $4.50 each
Three-frame nuclei $6 each, 25 or more $5.50 each

**PRICE ON ITALIAN QUEENS**

Untested queen $1.50 ea., $15 per doz., 25 or more, $1 ea.
Tested Italian queens $2.50 ea., $25 doz., 25 or more $1.75 ea.

I have just purchased 200 colonies black bees in modern hives with standard equipment, such as combs built on Hoffman frames with full sheets foundation. I am offering these bees in three-frame nuclei with pure Italian queen at $5.00 each; will accept orders for 500 and no more. So, if you wish to get in on this bargain, I advise you to plac order at once.

I am booking orders now and will be glad to have your order, which I assure you the best of service that can possibly be given. Will begin shipping April 15. Safe arrival guaranteed anywhere in United States and Canada. I have no disease in any of my yards.

For references I refer you to the following two banks: American Exchange Bank, Apalachicola State Bank, both of Apalachicola, Florida.

**SOUTH GEORGIA APIARIES** W. T. DONALSON Proprietor **Hebardville, Ga.**

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## THE AULT 1921 BEE SHIPPINC CAGE—Patent Pending

1st. It is a dark cage, much more so than the open screen cages we have been shipping in in the past.

2nd. The feeder uses pure sugar syrup. Better than Honey or Candy to ship on; it contains water as well as feed.

3rd. Feeders are made more substantial, one-third larger, an have screw cap that will not jar out.

4th. Instead of one small hole, we now use a cotton duck washer in the screw cap that has proven to overcome all the objections found to the liquid feed method.

5th. The Cage is one piece screen wire, protected by thin boards on the outside. Send for circular describing the cage in detail, prices, etc.

ORDERS are coming in daily for 1921 SHIPPING.
Will book your order with 20 per cent down, balance just before shipping

**QUEENS PACKAGE BEES QUEENS**

My free circular gives prices in detail, etc. Safe delivery guaranteed within 6 days of shipping point. We ship thousands of pounds all over U. S. A. and Canada.

pound pkg. bees $3.00 each, 25 or more $2 85 each
2-pound pkg. bees $5.00 each, 25 or more $4.75 each
3-pound pkg. bees $7.00 each, 25 or more $6.65 each.
F. O. B. shipping point. Add price of queen wanted.
1 Untested Queen $2 each, 25 or more $1.75 each
1 Select untested, $2.25 each, 5 or more $2 each.
1 Select Tested Queen $3.50 each, 25 or more $3.00 each
1 Tested Queen $3.00 each, 25 or more $2.70 each

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AMERICAN BEE JOURNAL

VOL. LXI—NO. 2 HAMILTON, ILL., FEBRUARY, 1921 MONTHLY, $1.50 A YEAR

# THE HONEY REGIONS OF INDIANA

BY EDWIN G. BALDWIN

The honey-producing possibilities of any State were judged, a quarter century ago, largely by its white clover, and no wonder. Then the main crops of the major portions of the United States, apiculturally, were gathered from the inconspicuous white clover. But few other honeys ever saw the larger marts of the country. That is speaking broadly, of course. It was probably for that reason Indiana has been much misunderstood as a honey State, certainly underestimated. For her white clover honey has not (nor probably ever can do so) placed her in the class with Iowa, Michigan, Wisconsin, Minnesota and New York; but albeit this is all true, few States can boast a more varied honey-flora than the Hoosier State. It is hoped that the following outline and map of the honey regions of Indiana may help to show just what the State has to offer to prospective beekeepers.

### Her Geology

The State lies well inside the limits of the limestone glaciation, and therefore, logically, she should afford excellent soil for the white clover, alsike and sweet clovers. But later glaciers carried a lot of debris, in the form largely of clay, gravel and sand, down over the limestone deposits, burying the northern part of the State under a layer of surface soil not so favorable to the clovers. As a consequence, the soil cannot endure drought, and leaches badly, easily becomes acid and lacks the ideal elements and conditions for best clover development, and hence for best clover honey secretion. That is the main reason, no doubt, why Indiana does not make the same showing in honey from clover as does northern Iowa, for example, and northern Illinois. From a temperature standpoint, and from the point of view of rainfall, the northern part of the State should be ideal for clover; it is the Miami soils that forbid this.

The limestone, that is one essential of the clovers, is buried too deeply for best sweetening effects on the crops grown there; in the northeastern part, for example, in Steuben and DeKalb counties, the limestone is 25 or 30 feet below the surface, while on the northwestern boundary, in Jasper and Benton counties, the terminal moraine shows the limestone close to the surface, huge boulders marking the edge of the later glaciations. As a result of the soil deposits, their nature and extent, the best region for the white clover is about a hundred miles south of the Michigan line. In the first two tiers of northern counties, the clovers are not to be relied on for surplus honey, and for the reasons given. Moreover, the extreme northwestern part is given up to the Kankakee marsh, not primarily a clover soil.

E. G. Baldwin

### Region 2; the Best Clover

It is the lands along the Wabash river, from Cass county in the west, to Adams and Wells counties in the east, that form the region primarily a clover belt, the best, in fact, in the whole State. It extends from about the southern line of Pulaski county on the north, and as far southward as Tipton and Randolph counties, the latter on the Ohio line. It just also happens that this is the only region in which the basswood remains in a degree sufficient to make a showing worth while in the supers. Crops of 150 and 200 pounds are not unknown from a single colony in this region, and an average of 100 per colony is not uncommon. The average of the seasons for clover honey seems to be about as follows: One good season, one fair season, and then a poor season. (See map.) Sweet clover is on the increase in the region just named. So also is alsike.

### Region 3; Fair Clover

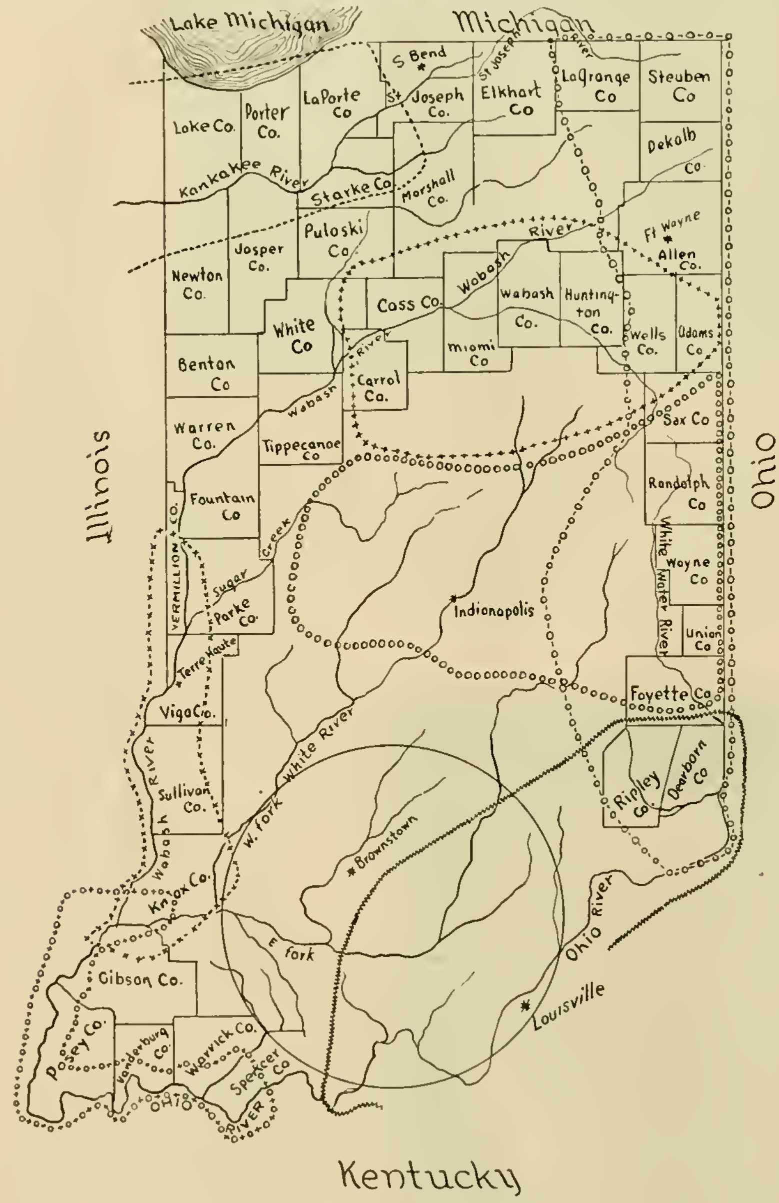
The area bounded by, say Tippecanoe on its northwest and by Randolph county, on the Ohio line; by about Fayette county on the southeast and by Parke county on the southwest, may be called the region of fairly good clovers. Indianapolis lies about central of this area. Here the lighter soils, the more southern latitude, and the lessened rainfall, as compared with the parts along the lake country, are, collectively, responsible for the lessened output of clover honey from this second region. White clover in this section is uncertain to a greater degree than in the region just north of it, and the level surface of the ground renders tilling easy and general; as a result, therefore, the extensive areas planted to the cereal crops have driven out much of the white clover. It is interesting and encouraging to note, however, that the farmers of this area are sowing an increasingly large acreage in alsike clover every year, either alone or, more often, with the red clover, and for that reason the honey-flows are gaining in amount pretty steadily of late years. White clover alone in this region is not dependable. If the farmers of the section named ever get to sowing alsike clover for seed, as they are doing in western Ohio, for example, the beemen there will find they are located in one of the very best parts of Indiana. Along the eastern side of the region white sweet clover is decidedly increasing, both sown and as a volunteer, and the writer has bought considerable honey from beemen of that part, which has had more of sweet clover in it than white clover, though sold primarily as a white clover honey.

### Region 4; Best Sweet Clover Region

The east portion of the State is the part especially hopeful for honey from sweet clover, for in general, the soil is thin or gravelly and clayey in nature, broken in large portions, and often acid. This plant, with white clover about once in five years, makes about all that most of this section can count on for surplus honey, with the exception of a narrow strip near Wells county, where the good white clover belt overlays this region.

### Region 5—Locust

While it is hardly fair to call locust a main source of surplus honey, it comes nearer to being that in southern Indiana than anywhere else in the United States. Locust (**Robinia pseudacacia**) in this part of Indiana is so common that it is met with in the woods about as commonly as oaks further north, or beeches in middle Indiana. In fact, it is one of the most common trees there. If the locust-leaf Miner, a troublesome pest on the leaves of the tree in May and June, can be controlled or eradicated, the tree bids fair to be a source of considerable surplus honey to the best beekeepers. We say best, for only those can secure crops from a blossom that comes so early and lasts so short a time. The writer, at the State fair in Indianapolis, saw and tasted honey that was called locust honey, and which he is fully convinced was mainly from that source. Needless to say, colonies must be strong early to secure any surplus from locust. It so happens, too, that this very part of the State is the best apple and fruit section, and early strong colonies can get a start in the supers from that source.


Lake Michigan
Michigan
S Bend
St Joseph Co.
LaPorte Co
Porter Co.
Lake Co.
Elkhart Co
LaGrange Co
Steuben Co
Dekalb Co
Kankakee River
Starke Co
Marshall Co.
Pulaski Co
Jasper Co.
Newton Co.
River
Ft Wayne
Allen Co.
Wabash
Wabash Co.
Huntington Co.
Wells Co.
Adams Co.
Cass Co.
White Co
Miami Co
Benton Co
Carrol Co.
Wabash
Warren Co.
Tippecanoe Co
Sax Co
Randolph Co
Fountain Co
Vermillion Co.
Creek
Sugar
Parke Co.
Wayne Co
White Water River
Union Co
Indianapolis
Terre Haute
Vigo Co.
Fayette Co
White River
Sullivan Co.
W. Fork
Wabash River
Ripley Co
Dearborn Co
Brownstown
Knox Co.
Ohio River
E Fork
Gibson Co.
Louisville
Posey Co.
Vanderburg Co.
Warrick Co.
Spencer Co
Ohio River
Illinois
Ohio
Kentucky

Principal honey regions of Indiana

Region 1—.....................—Kankakee River marsh lands.
Region 2—xxxxxxxxx—Best white clover and basswood.
Region 3—oooooooooo—Fair white clover, with alsike and sweet clover increasing.
Region 4—o-o-o-o-o-o—Best sweet clover.
Region 5—vvvvvvvvv—Locust.
Region 6—xoxoxoxox—Climbing milkweed.
Region 7—x-x-x-x-x-x—Smartweed or heartsease.
Circle—Poorest region for commercial beekeeping.

Red bud (**Cercis Canadensis**) is very common in this part of Indiana, and is an aid to good work in the brood-chambers and in the supers as well. In point of time, it is the precursor of fruit bloom, as the latter is of locust. The main sources of surplus honey in the section named must ever be from fall flowers. Goldenrod yields here and with asters and some Spanish needle often makes out a fair crop. Rarely white clover gives a lift, as it did in 1918.

### Poorest Part of the State for Honey

The most unpromising part of Indiana for honey, and the one that offers least attractions to the commercial producer, is that marked with the circle in the accompanying map. It has a few beemen that by good management do secure sometimes a fair crop, but it is hilly, poor soil, rough and acid, and has little to recommend it apiculturally, for it is not the native habitat of any plant or tree that is extremely good in nectar secretion.

### Region 6; Vining Milkweed

It is a truism, in Florida, that it is but "two whoops and a holler" from the best to the poorest honey regions of the State. The same is true, if one steps from the poor section just considered, to the extreme southwest of the State of Indiana. That is called by some, the very best honey region of any. It is the unique region of the vining milkweed (**Gonolobus laevis**), in the bottom lands of the lower White River, the lower Wabash, and about 60 miles of the Ohio River. (See map. See also, American Bee Journal, October, 1920). Not only is the vining milkweed, or bluevine the main source of honey here, but the honey is delicious and exceedingly fine for table use, light colored and of a good body. It is almost a sure yielder, is absolutely so if the weather remains dry during the blossoming period. One beeman in that region owns and operates over 600 colonies, another reports 175 pounds per colony, average, in five months, from this source, and much larger gains have been reported. The commercial importance of this limited section is increasing yearly. It does not extend much farther north than Knox county, nor farther east than Spencer county.

### Region 7; Smartweed

Where the bluevine ends, however, the region of best yields from smartweed begins. That is to say, from Knox county northward to Vermillion county. In this limited area smartweed, following clover, makes a section for surplus honey not to be despised; in short, one of the very good ones in the entire State. If clover happens to be good, also, the yields may become astonishing, and all the honey is white and saleable, and sells as readily as pure clover honey. Smartweed may be considered the main source of surplus honey in Sullivan, Vigo and Vermillion counties. An average of 100 pounds per colony is not infrequently reported here.

From Vermillion county northward, to the Kankakee valley lands, in Fountain, Warren, Benton, Tippecanoe and White counties, the farming land is the best in all the State, but there is in all this section no distinctive source of surplus honey, none very dependable. White clover is but fair, having been almost eradicated by the high degree of tilling of the lands for farming; alsike clover is but scantily sown, and sweet clover has not yet gained much of a foothold. The fall flows are good only in limited areas. Goldenrod does not seem to yield much, if any, honey, and the bees are almost never seen working it. Smartweed does not count much except in very wet seasons. Some Spanish needle is found, but only local and scattering.

Just east of Warren county, beginning about Tippecanoe county, and extending for a narrow strip along the Wabash river northeast, the white sweet clover is about as good as anywhere in the State; for miles along the highways and railroads, interurban lines and in the waste lands generally, the sweet clover yield is the best in any county, save possibly the eastern strip of Indiana named above. It reaches into the region of best white clover.

### Region 8; Kankakee Valley Marsh

It remains to consider the northwestern section as unique and distinct in honey-flora, as is the southwestern section. The valley lands of the Kankakee River are almost annually inundated where not well drained by the large irrigation and drainage ditches. Much of the surrounding land is marshy, and only partially reclaimed, and that, too, rather recently. Reclamation is still going on. In general the region includes large portions of Laporte, Starke, Lake, Newton and Jasper counties. Some of the best and best-known beekeepers of all the Hoosier State are located in this region, both in Indiana and also across the border in Illinois. Here white clover can not be counted on for surplus oftener than once in five years. The main flow is in fall, from buckwheat (the one buckwheat region of Indiana), from Button-ball (**Cephalanthus occidentalis**), Spanish needle (**Bidens Bipinnata**), milkweed (**Asclepias incarnata**), boneset or thorowort (**Eupatorium**), together with wild asters. All these make up a flow that is very dependable. When white clover happens to have its "innings," as it did two years ago, the yields secured are astonishing. In those cases, the conditions are much like northeast Ohio, where, though the main flow is from fall sources, the years when the clovers do make good give a double chance for surplus that makes the smile of the beemen one "that won't come off."

A glance at the accompanying regional map of Indiana may help to make plain the seven more or less overlapping areas here described.

The regions, while more or less distinctive, are not bounded by hard and fast lines, of course, except for the southwest and northwest portions of the State. The Kankakee region and the bluevine region could almost be outlined with a rope. Of these seven regions, four or five offer considerable inducements to commercial beekeeping, some of which are as good as are to be found in the central west. Specialists are to be found in almost every part of the State, and as the number of colonies is variously given from 150,000 to 250,000, the aphorism of Mr. Townsend is probably as true for Indiana as for the balance of the United States, viz.:

"'Nine-tenths of the honey of the markets is produced by one-tenth of the beekeepers."

Indiana has not a honey flora that will give big yields without good beekeeping methods, and the slogan is especially true for Hoosier beedom:

"'Better keep bees better, or better not keep bees."

## WILD THYME IN NEW YORK

We have received some interesting information in regard t wild thyme from J. B. Merwin, of Prattsville, N. Y. Mr. Merwin lives in a section where this plant has successfully established itself over several square miles of territory. He writes that he never fails to secure a good crop from that source each year, although in wet seasons it does not do so well. In 1914 the thyme was established over an area of about ten miles square, but the past summer he has found it growing 18 miles east and about the same distance north of his home.

The honey from thyme is very light amber in color, of good body and very good flavor. Customers like the flavor very much and once tried, the customer always wants the thyme honey again. Mr. Merwin states that although the quality is very good the bees do not winter on it quite as well as on clover honey. It begins to bloom about the 15th of July, just at the close of the basswood flow, and lasts until killed by frost, sometimes blooming into November. In 25 years it has never entirely failed, even when no honey was secured from anything else. As high as 125 pounds per colony average has been secured from thyme in one season.

Thyme came originally from Europe, and is gradually spreading in the regions where it has become established. It is now reported from various localities from Nova Scotia to Southern New York, and also from North Carolina. In a few localities in Massachusetts it is a well-known source of honey, as it is also in southwestern Vermont. It occurs also in Connecticut, but we can find no record of any locality where it is sufficiently established to furnish honey in large quantity.

In Delaware County, New York, where Mr. Merwin lives, it is commonly called "summer savory" or "savory." This name is incorrect, as the savory is a different plant. Britton and Brown state that it has the following old English names: Brotherwort, hillwort, penny-mountain and shepherd's thyme.

Where it is well established the thyme covers the ground with a carpet and it furnishes a good forage for animals as well as bees, coming as it does in midsummer. Mr. Merwin states that there is no land too poor for it, nor winter too cold or summer too dry to prevent the plant from thriving in his region. In a very dry summer it has covered a gravelly hillside with a luxuriant growth. Many of the farmers keep cows which are grazed on thyme during the summer months. It is very persistent and hard to eradicate, once it gets established. Farmers who tried to get rid of it made but poor progress. One who tried to kill it out by plowing, only made a better seedbed for it and it grew more luxuriantly than ever.

## TAKE AN INVENTORY

By E. S. Miller

Do not fail at the beginning of the year to take a complete inventory of all supplies, as well as all honey, wax, etc., if you are a business beekeeper. To get at the value of hives and other paraphernalia, ascertain from the catalogs the replacement value, or what it would cost new. Then deduct for depreciation. For example, if the average hive-body with good care will last fifty years, the depreciation will be 2 per cent for every year the hives have been in use. If a cover is good for 25 years, then 4 per cent should be deducted. If the life of a bottom-board is 20 years, deduct from replacement value 5 per cent for each year of use. Of course, the life of a hive, and consequently the rate of depreciation, will depend upon the care given. With outdoor wintering, depreciation is a much larger item than if colonies are wintered in a dry cellar. The difference between annual inventory values plus cash receipts, less cash expenditures, less cost of labor and other items such as rent, interest, etc., will enable one to figure net profits and cost of production. The commercial honey producer will, of course, have a more elaborate system of accounting.

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FRANK C. PELLETT ........Associate Editor
MAURICE G. DADANT ........Business Manager

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## THE EDITOR'S VIEWPOINT

### Death of Franz Richter

Our readers will recall that in April last, mention was made of help sent to the Austrian publishers of "Der Bienenvater" by the members of the National Convention of Buffalo. Franz Richter, to whom the food orders were forwarded, sent us a very hearty letter of thanks, saying that the people of Vienna were actually starving. As he did not ask for further help, we concluded that the year's crop was relieving them. But our friend, Mr. Aeppler, of Wisconsin, now informs us that he has just received a letter from Editor Alfonsus, of the above mentioned publication, announcing the death of Franz Richter, at 73, December 1, and that his death is directly traceable to the meager nourishment of the past few years, which lowered his vitality and caused his untimely death. Mr. Alfonso acknowledges the receipt of $5 lately sent to him by Mr. Aeppler, saying that this has enabled his family to eat meat, for the first time in six months.

So people are still starving in Vienna, while we live in plenty! And this is the Twentieth Century! All as a result of the World War, so cheerfully declared by the late Francis Joseph and the self-admiring Kaiser!

### The Plagues of Beekeeping

Now what would you describe as the plagues of beekeeping? Movable-frame hives, honey extractors, comb-foundation, artificial swarming, practical queen-rearing, the use of smoke in opening hives, feeding sugar syrup, keeping down the drones, supplying built combs to avoid wax production, and generally everything which modern beekeeping has devised? That is the statement made in two pages of warning, condemning the "immoral" practices of progressive beekeeping, by a facetious writer in our contemporary magazine, L'Apiculteur, the oldest bee magazine extant. If it was written for a hoax, it is well gotten up. But the man appears to be in dead earnest. What next?

### Sell in Larger Quantity

Beekeepers often make the mistake of encouraging sales in too small quantity. It takes little more trouble to secure the sale of a 10-pound pail of honey than a quart jar. If the beekeeper will put up his produce in 5 and 10-pound pails and 30 and 60-pound cans for the retail trade, and leave the small jars of a pound or less to the bottlers, he will profit thereby.

The article on marketing by Arthur C. Miller, in the December Journal hits the nail on the head. In my own experience in building up a trade for honey, I began by pushing the sale of small packages, and sold large numbers of quart jars. I also sold through the grocery trade a liberal amount of honey put up in jars holding about one pound. While these small packages sold readily, I later found that the ordinary producer can ill afford to devote the necessary time to bottling. Bottling is a business by itself and the extra cost is very large. The cost of labor, jars, labels, etc., together with a small profit to justify the trouble, makes the product sell at a very much higher price than is necessary in larger containers. The bottler is entitled to his extra profit and the beekeeper who puts up his product in such small packages should receive the extra price. However, by selling in larger containers the beekeeper moves his honey much faster, the customer uses more and everybody profits by the transaction.

As time passed and I became more experienced in selling the product of my hives, I was surprised to find that it was far easier to sell the same amount of honey in 10-pound pails than in the smaller packages. It is easy to sell one quart of honey by itself, but much harder to sell 1,000 pounds of honey in quart jars than to sell 100 10-pound pails. One customer living on a large ranch in the west bought seventeen 60-pound cans at one time. There were numerous customers living in adjoining States who bought their year's supply in 60-pound cans. City customers in Chicago and Des Moines took 30-pound cans, which were shipped by express.

The consumer usually buys in the kind of packages to which he has been accustomed, and the beekeeper in building up a trade can determine for himself the kind of packages in which he will sell. If he offers something different the sales may be a little more difficult at first, but they soon become easier.—F. C. P.

### Adulterated Honey

The Chicago Evening American of December 18, carried a signed article by Brice Belden, M. D., which makes the charge that honey is very generally adulterated. We quote Dr. Belden as follows:

"'Honey is one of the things most extensively adulterated, and it has become almost impossible to obtain pure honey in city markets. Glucose, flavored with a minimum amount of honey, is the substitute sold in this case."

This newspaper goes into the homes of many thousands of people who should be customers for the beekeepers' products. If the facts are as stated, it is high time for the beekeepers to take action to place their product in a pure state before the city consumers. If they are not as stated, then the American owes it to the beekeepers to place the information before its readers as prominently as it has given the information concerning adulteration. If pure honey is not to be had in Chicago, the beekeepers of America should know it as well as the people of Chicago. If an adulterated product is not generally offered there, such a statement will do untold harm to the beekeepers' market by making consumers afraid to buy, for fear of being imposed upon.

### Dr. Miller's Memorial

The mere mention of a campaign for a permanent memorial to Doctor Miller, will enthuse many of our readers, especially the older ones who have learned to love him, and dozens of whom have been aided by his timely and kindly advice. At the suggestion of Mr. E. R. Root, the editor of this journal, C. P. Dadant has been made chairman of a committee of five to formulate plan . The other four members of the committee are Dr. E. F. Phillips, of Washington, D. C.; E. R. Root, of Medina, Ohio; E. G. LeStourgeon, of San Antonio, and B. F. Kindig, of East Lansing, Mich.

The end in view will be to get the maximum number of subscribers to the fund, and anything from a dime up will show a fellow's heart is in the right place. The campaign will start soon and find its maximum point on or about June 10, which is Dr. Miller's ninetieth anniversary.

Likely we should await the committee's action before proceeding, but the "boss" is on a southeastern trip, hobnobbing with the beekeepers down there, and we're going to risk his displeasure by opening the campaign right here. Come on, beekeepers, I'm putting the first dollar in; who's going to match me?—M. G. D.

### Should Beekeepers Study Entomology?

The above question is asked by a practical honey producer of Tennessee, who has had but a common school education.

I am perhaps hardly fit to answer this question in a positive way, because my own knowledge of entomology, as a science, is very limited. Were it not for the entomologists who have preceded us, what would we know today about bees? We would still be groping concerning the mysteries of the beehive, wondering, perhaps, as our ancestors did, whether the king was really one and whether the setters (drones) did the hatching of the eggs.

Years ago, when I was a young man, I made some collections of insects. Then I read Packard's "Guide to the Study of Insects," or rather I read "at it." Later I procured Comstock's up-to-date work and scanned it, more as a reference work than as a textbook. The study of insects is immense, intricate, not only because of the millions of different insects, but also because of their various forms and their wondrous habits. Grown-up farmers, who are honey producers and did not get a college education, would waste their time trying to master the details of entomology. But they should learn to distinguish a hymenopter like the bee, the wasp, the hornet, from a coleopter, like the potato beetle, the lady bug, the June bug, or from a lepidopter, like our beemoth, or the little codling moth.

Of course, we need to read the writers on bees, most of whom give the entomological side, or natural history of the bee, in their works. Without some of these, we cannot call ourselves fully informed beekeepers. I read and re-read Reaumur, Schirach, Huber, Dzierzon, Langstroth, Barbo, Cheshire, Cowan, Phillips, Snodgrass. No one who reads these, or part of them, carefully, will fail to get a fairly intimate view of the bee's natural history.

When it comes to the general features of entomology, if we wish a study divested of almost all scientific terms and having to do mainly with observations upon the curious habits of insects, nothing equals Fabre's immortal descriptions, which have been translated and are sold in this country. Whether you read of the "praying mantis" that makes a meal of her husband during the honeymoon, or of the dung-beetle which lays its eggs in balls of dung and buries them deep in the ground, each description is as interesting as a novel and often much more wonderful.

I bought Fabre's "Souvenirs Entomologiques," 10 volumes, in his own language, and found them delightful reading. Perhaps more than anything else did I enjoy the narration which he made of "My school," in a backward village of southern France, in the first half of the 19th Century. The school-room was at the same time kitchen, dining-room, bedroom, chicken-coop and pig-pen, for the pigs trotted around the scholars at the lunch hour, to gather the crumbs.

If it was possible for a man of talent to overcome such a handicap of his young days and become one of the greatest entomologists, why cannot anyone of our farmer beekeepers, with a common school education, acquire a smattering of this science, enough at least to give him a glimpse of the immense variety in the world of insects? Each of Fabre's works is worth reading.

We have, in this country also, some interesting writers on insects. Mr. Floyd Bralliar, of Madison, Tennessee, wrote a very charming, I might say fascinating, little work, "Knowing Insects Through Stories," intended for children, but very pleasing to the grown-ups.

Though the bee is one of the rare insects directly beneficial to man, many other insects are also beneficial to him in an indirect way, such as are predaceous and live upon injurious insects which would become a scourge without their beneficial interference.

Yes, study entomology, you will not regret it.

But why answer this question in the editorial columns? Would it not find its place better in the "Answer" department? No, because the question and answer department has only to do with the technical part of practical beekeeping, the bread-and-butter side of it. This has to do with the science of the business and deserves a more aristocratic place. Without the science of beekeeping, the practice would be poor.

### Iowa Short Course

Dr. E. D. Ball, Assistant Secretary of Agriculture at Washington, D. C., spoke at the Short Course at Ames. He is authority for the statement that wherever empty hives that had once contained foulbrood were sold, there foulbrood developed. He gave names and dates. If such is the case, we should carefully singe our empty hives when we transfer a foulbroody colony out of them. It does not cost much. If there is a doubt, better be on the side of safety.

Dr. Wallace Park, of Ames, gave a very interesting address on swarming. He quoted an old writer who stated that the beating of tin pans, to prevent the bees from flying away in swarming, was useful in keeping the bees from hearing the queen give her orders for departure. Others say that the beating of tin pans is to imitate the peals of thunder and make the bees think a storm is imminent.

Dr. Park states that there are scent glands at the extremity of the abdomen, which give off a strong odor and attract other bees of the same hive, when they are fanning their wings at the entrance of the hive. This, I believe, is after Sladen, who believes that it is not at all the "hum," but the scent of these glands that attracts the other bees, when the swarm is hived. These glands are called "glands of Nassanoff," after the man who originally discovered them. Snodgrass mentions them on page 85 of his "Anatomy of the Honey Bee."

Dr. Wallace Park is making careful and thorough experiments upon the flight of the bees, the amount of honey which they may or may not carry, the number of flights of worker-bees per day, and similar subjects. From the data gathered, it would appear to us that bees are as varied as human beings in their aptitude and willingness to work, their activity, their speed and the amount of honey with which they are willing to load themselves. It would seem that there are those among them who prefer to play a good part of the time. Dr. Park is to continue his experiments, but he has promised to give us some facts, when the time comes.

For the first time, I heard at Ames that Adam Grimm, of Wisconsin, who has been dead many years, was the man who introduced foulbrood in the United States, by bringing colonies of bees from Europe. Was there no foulbrood in the United States? His importations were in 1867.

### Influence of Male and of Female on Offspring

Which has the most influence upon the offspring, the queen or the drone? I would like to see this answered by those who have cause to know. I am told by Mr. ——, of Ventura, California, to get queens of Dadant, because they use large hives, large brood-chambers. This matter ought to be discussed, early, before May if possible. N. Y.

Answer: We do not rear queens for sale, as it pays better to produce honey. Besides, our large hives do not make the queens prolific, but just give to the prolific queens a chance to display what they can do. The question of the influence of either sex was discussed at the International meeting of Paris, in 1900. I was present. The consensus of opinion was that the drones give the moral qualities, temper, activity, etc., while the queens furnish the physical qualities, endurance, prolificness, acuity of senses.

Can our readers enlighten us? Here is a good occasion to use Dr. Miller's byword: I don't know.

### Good Samaritan Fund

Funds are still coming for the victims of the war in France and Belgium. They are needed, and we should not forget the sufferers. We list:

| | |
|---|---|
| Acknowledged in November | $ 6.00 |
| Miss Annette Ozanneau, Keokuk | 1.00 |
| Fresno Co. Beekeepers, California | 5.00 |
| Total of new list | $12.00 |

## THE FUTURE EDUCATION OF THE BEEKEEPER

By H. F. Wilson

When Mr. Demuth remarked, at our Chautauqua last summer, that scientific application of any formula was just a common-sense use of it, I think he opened the way for all of our beekeepers to become scientific investigators. In fact, some of our best-known beekeepers of the past and present were and are investigators of the science of beekeping. In beekeeping terms they are known as practical beekeepers, but these men have been successful, because they studied the bees and their actions under certain conditions and learned from these studies what was best to do and why certain things should not be done.

Many observations are made and recorded in the bee journals by our beekeepers that are scientific, but seldom do these observers attempt to reason out the direct application of their observations.

One of the finest methods of increasing the knowledge of beekeeping is through observations of the (scientific) practical beekeeper, who takes time to study the reasons for normal and abnormal conditions in the bee colony and is able to reason in a logical manner on the results.

Scientific investigations are nothing but careful observations of natural phenomena, which reach a greater degree of exactness with increased observations. Take, for instance, the temperature of the bee cellar. For a long time certain of our beekeepers have realized that near 50 degrees F. was the best temperature for the bee cellar. This conclusion was reached after a long series of observations of the condition of bees at different temperatures in the cellar. Lately this scientific fact has been proven by actual observation of the temperature requirements of the honeybee cluster during winter.

The real difference between the average beekeeper and a well-trained investigator is that the beekeeper has not had the advantage of special training in chemistry, physics, zoology, and other subjects necessary for the study of the economy of the bee colony. While Dr. Miller is no longer able to defend himself, I do not think it any reflection on his wonderful career to say that his early education in medicine must have helped him greatly in studying the ways of bees. The words "practical" and ""scientific" really have the same meaning as applied to beekeeping, and only scientific beekeepers can hope to keep in the game of the future. Hundreds of thousands of dollars are going to be invested in bees and thousands of colonies will be found where hundreds now exist.

The beekeeper of the future must be a trained man. Not only must he have training in the manipulation of bees, but he must have a knowledge of physics, chemistry, soils, botany, zoology, business methods, and other minor subjects.

Given unlimited time, a certain knowledge of these subjects may be obtained through reading or coming in contact with other men. But the world of today is moving too fast for such methods and we must learn quickly or be left by the wayside.

Where are we to go for this training? Like other agricultural subjects, it must be taught in our schools and colleges, where it will take the more technical name of "Bee Husbandry."

Bee husbandry is rapidly being included in the curriculum of all agricultural colleges, and in a few years this subject will be a recognized part of higher agriculture. At the Ontario Agricultural College, Guelph, Canada, a building has recently been completed which, I understand, is the first building erected exclusively for beekeeping in America. We should have many such buildings in the United States.

During the last few years, bee husbandry has become a recognized part of the curriculum of the College of Agriculture in the University of Wisconsin and plans are under way to provide a laboratory, complete in every detail.

The following courses are now being offered to students who wish to take up this work:

1. A five-weeks' short course in beekeeping in connection with the regular fifteen-weeks' farmers short course. This course is primarily meant for farm boys who are doing general farming, but has been arranged so that practical beekeepers may receive special instruction in a course combined with poultry or horticulture. Given in 1921 from February 7 to March 17.
2. An elementary course for beginners covering one semester of eighteen weeks.
3. An advanced course for beginners extending over the second period of eighteen weeks of regular work. Students who have had work in apiaries are also allowed to enter this class.
4. A complete short course in beekeeping for all who cannot afford to remain for longer than one year. This course is intended to give the full year's practice and includes actual care of one apiary throughout the year. Four apiaries, two commercial and two experimental, are available for study at all times. Each student is also given a series of problems in management corresponding to the four seasons of the year.
5. A four-year course in bee husbandry, which includes all fundamental studies, such as physics, chemistry, zoology, botany, business administration, etc. Each student must have spent two summers in a commercial apiary before graduation and must have carried on a certain series of experiments along the line of general beekeeping practice. He must also participate in marketing one crop of honey. It is expected that every student who finishes this course will be able to successfully engage in the business side of bee husbandry or take up college experimental work as he desires.

Wisconsin.

1920 class in elementary beekeeping at Wisconsin University

### DO BEES NEED SALT?

Some years ago I had a California cooler for milk and butter and other things; it had gunny sacks on sides all around and water on top, with small holes in side of tank, so the water trickled down over the sacks and kept them wet all the time. Bees were all over the sacks to get water, and so I put a lot of salt in the tank so the water would be very salty, and that increased the number of bees getting the salt water, so the cooler was entirely covered with bees. But the lady of the house objected to getting anything in and out of the cooler; so I had to give it up, and since have had nothing of the kind.

But now some California beekeepers in the Western Honey Bee say they soak combs that have been in foulbrood colonies in salt water, and use them again, and no foulbrood appears; salt may have something to do with keeping bees healthy, and if so, why don't we have some practical way to give bees salt? We might have some big water bags like the automobile tourists use, filled with very salty water, and hang them in the apiary and let the bees help themselves. I wish some one would give us advice from a Government Experiment Station, as to whether bees really need salt.

Daniel Danielson.
Colorado.

## QUEEN-INTRODUCTION

### Can It Be Made One Hundred Per Cent Successful?

By Allen Latham

Of all the trials to which beekeepers are subjected, few try the patience beyond the killing of a choice queen by some bolshevik bees. The subject of queen-introduction has, perhaps, been brought into the columns of the bee journals as often as any, and countless ways of introducing queens have been offered. Many of these suggested methods have their merits, but all have one common weakness—they all fail at times. Tom succeeds with one method while Dick fails with that but succeeds with another. Is there some one method which is fool-proof, which will work with all varieties of bees, and which will work under all conditions? Am I about to offer such a boon to the beekeeping world?

No; I cannot offer this boon, but I do think that I can offer a method which is simple and within the reach of all, and one which comes as near reaching the 100 per cent mark as we shall ever find unless we are willing to adopt a method which costs more than the death of an average queen. A breeding queen should never be subjected to any other method than that of letting her loose upon combs of hatching brood, kept warm by artificial heat, and from which all old bees are excluded. This is a 100 per cent method, but is too costly for the regular procedure.

The method I am about to explain will not work with colonies that are queenless. It can be used only with colonies which have a queen that is to be replaced by another. As at the present development of beekeeping a very large per cent of all queen introduction is requeening, this new method will prove usable in the vast majority of cases.

Proceed as follows: Find the old queen and cage her, with or without attendants. This cage need have no candy nor exit hole It may be a piece of half-inch board 1½ inches square with an inch hole sunk in one side, over which hole is tacked a square of wire-cloth. Place this cage with that which contains the new queen side by side on the top-bars of the frames. So place them that they are wire down over a space between two frames. Also adjust them so that the candy-plugged exit of the cage containing the new queen is closed to the bees of the colony by the other cage. Close the hive and leave it thus for forty-eight to sixty hours.

It is well to place several thicknesses of burlap or other loose material over the cages before putting on the cover. A cold night, or a hot, sunny day will, perhaps, ruin the caged queens. Right here let me ask: How many caged queens are probably lost every summer because only a thin cover is between the cage in which the queen is confined and the sunshine of a mid-summer day?

After the lapse of two or three days remove the cage containing the old queen. In ninety-nine cases out of one hundred the other cage will be found with no angry bees about it, and its inmates will be found well fed by the bees of the colony. Slightly loosen the cardboard over the candy, or punch a small hole in it. Frequently, in the case of weak colonies, the bees will not release the new queen for weeks, if they do not get a taste of the candy. I have even known them to propolize the cardboard entirely over, thus sealing the queen in for eternity unless the beekeeper intervenes. Now close the hive and let it be undisturbed for four or five days.

This method has several features of unusual value, some of which I will enumerate and enlarge upon.

Of prime importance is the fact that the colony is never dequeened. Not being dequeened, it does not acquire the frenzy which a dequeened colony is likely to acquire. Not acquiring that frenzy, it omits, usually, the results of that frenzy. In other words, it will not commonly construct queen-cells under the treatment which I have outlined. Of even more importance, it will not acquire the animosity against the new queen which it would have if the old queen were not present.

This last statement is most suggestive. I will not take space to go into it further, but every student of bees will find it a very resourceful subject for study. I will barely mention that I have had colonies care for and feed upwards of ten queens for weeks at a time, each queen without any attendants and all cages without food. I once thought to winter surplus queens after such manner, but found that eventually all queens but one would be deserted as the rigors of winter set in.

Another very important fact develops from this absence of animosity towards the new queen. She is fed by the bees very soon, if not at once. Consequently queens thus introduced fare much better than those which have to subsist upon the candy in the cage. All the attendants of the new queen can be removed, and even the candy, and usually all will be **well**. I find, however, that sometimes a queen is allowed to starve, and for that reason I furnish the cage with a moist candy, if no escort bees are present, and the usual candy if the escorts are there. In most cases both escorts and queen are soon fed, and after several days the candy in the cage will be but slightly diminished. Hence, the new queen is in a plump condition by the time she is released, and gets to laying very promptly.

Another consequence of this plan of introducing queenbees is the absolute certainty that a colony need not remain queenless for more than a day or two. Why do I make this statement? I will tell you. The old queen is not killed. When I introduce queens by this plan and feel at all doubtful about the outcome, I put the old queen into a cage stocked with candy and escort bees at the time I remove her from beside the other queen. This cage is placed in the upper part of the hive, between the cushion and inner cover. Four days later, when I look into the hive to see if the new queen is O. K., if I find that through some defect the in-

Short course class in beekeeping, Wisconsin, 1920 troduction has been a failure, I simply put the old queen down where the bees can release her and let the colony go until I can try again.

That last paragraph suggests that this method has its failures. I will say that I simply take that precaution. I have never had to carry it to fulfillment more than two or three times. I think that in those two or three times failure was not due to the method, but was due to some defect in the queen. Do the best we can, some queens are weaklings, doomed to a short existence. In one of those few cases the queen was found dead in the cage, had probably been subjected to an injury when put into the cage, which injury eventually proved fatal, but was at first overlooked.

I have, in a great many cases, left the old queen over the top-bars and instead of removing her, shifted the cages so that the new queen could be released. In the majority of cases the new queen would be released and soon be laying, but in other cases they have turned up missing. Some queens are too nervous to bear the presence of another queen in the hive, and so conduct themselves that the bees cannot endure them. I am fully persuaded queens introduced by this method would be perfectly safe if they would behave themselves in a quiet manner and not go on a rampage. As I could not control this factor I adopted the plan of removing the old queen on the third day.

Another modification I have tried is as follows: Both cages are shoved into the entrance wire up. The third day, as before, the cage with the old queen is pulled out. Unfortunately, when this modification is tried there are many failures. I think this is due to the fact that the bees in the upper part of the hive are of a different age from those on the bottom-board.

One of the charming features of this method is that it works with Italians, blacks, Carniolans, hybrids, etc. I have succeeded repeatedly with it with colonies of the most vicious hybrids.

There is one feature which I have not decided upon as to the merits. I said above that the old queen could be with or without escorts. I have not yet decided whether it is better to give her escorts or not. If my readers try this method of introduction next season, I hope that they will experiment along this line. I have practically always put the old queen back with no escorts, but it has occurred to me of late that if escorts were furnished, the colony might show even less uneasiness about its queen than when the queen has no escorts. Though the colony does not go into a frenzy, it does show that something is wrong.

Connecticut.

## THE INDIAN BEE

Our readers who knew Leslie A. Kenoyer when he was engaged in a study of the problems of nectar secretion at the Iowa College of Agriculture, will be interested in the picture of the combs of the giant rock bee hanging from the underside of a projecting rock. This picture of the combs of **Apis dorsata** was taken by Mr. Kenoyer at Gwalior, India. Mr. Kenoyer is now connected with the Allahabad Agricultural Institute. We hope that he will find time to make a detailed study of the habits of the giant bee of India and give us further information concerning them.

## OBITUARY

### Noah D. West

Mr. Noah D. West, one of the quartet of New York bee inspectors, passed to the other side on November 9, 1920, in his 76th year, after several months of illness. He was a native of the town of Broom, Schoharie County, where he engaged in farming and beekeeping and occasionally taught in district schools. He experienced much success and later removed to Middleburgh, where he enlarged his holdings of farm property, and largely increased his apiaries, which for some time consisted of several hundred colonies. He was a careful and conservative apiarist and produced large quantities of comb honey until recently, when, I believe, he produced mainly extracted.

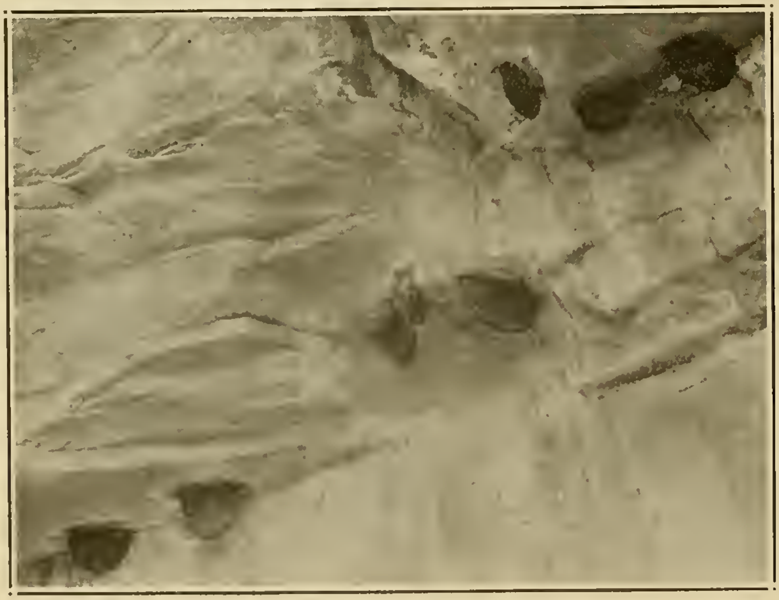
Mr. West was on the State bee inspection force for nearly twenty years; he was faithful and interested in the work and of much assistance in our beekeepers' institutes and conventions; we shall sadly miss his counsel and the results of his ripe experience in our gatherings. Some years ago he invented the West spiral queen cage and queen-cell protector, which he once told me was suggested by the spring which is sometimes used in hanging bird cages; it was well adapted for its purpose, with its cartride shell, feeder, tin cover, etc. He held patents for the United States and Canada on this device and manufactured and sold large quantities of them.

Mr. West resided in the village of Middleburgh for twenty years past and has been more or less connected with its activities since. He was a lifelong member of the M. E. Church, a member of its official board and active in its varied work.

He is survived by his wife and seven children by a former marriage.

Wheeler D. Wright.

Altamont, N. Y.



Combs or the Indian Rock Bee, *Apis dorsata*, hanging from underside of projecting rock at Gwalior.

## A GROWL

By A. F. Bonney

In the current issue of Gleanings, Mr. Coverdale reports the honey crop out of the hands of the producers. This may apply to the eastern part of this State, Iowa, and the western half of Illinois, but will not for the west half of Iowa and the east half of Nebraska or the northwestern part of Missouri, where we had a very heavy white clover flow. Woodbury County, Iowa, produced one-and-a-half million pounds of honey, and, I am told, much of it is still unsold. Only two-fifths of my heavy crop is disposed of (December 15), and other beekeepers report a similar trouble.

I do not think there is anything to get excited about. The average demand for honey is increasing rapidly, and there is no reason why local State demand should not absorb every pound of honey produced, more particularly the comb. I have sold a considerable amount of comb honey here in shallow extracting frames, which average about 4 pounds each. I make a container by bending heavy millboard, such as packing boxes are made of, to cover sides and bottom of frame, wrap all in heavy paper and deliver. The cost is only the time. I got 35 cents a pound, gross weight. The great advantage is: I sold four pounds instead of one. Persistent advertising will sell even the granulated honey.

This is the first season I ever had honey on hand after November 15.

The cause: People around here sold as low as 20 cents a pound, for both comb and extracted, and one man sold 5-pound pails, by express, charges prepaid, at $1.40 each.

He that hath plenty of good Home
Brew,
And giveth his neighbor none,
Shan't have any of my Home Brew
When his Home Brew is gone.
O! won't it be joyful, joyful, joyful,
O, won't it be joyful,
When his Home Brew is gone?

And won't it be joyful when the price cutters are out of honey, for then we shall get fair prices. In the meantime, the Producers' League shall have made a start, and conditions will gradually improve.

I, for one, am inclined to withdraw my help from the back-yard, barnyard beekeeper, the one who has bees this year, none the next, who is the cause of the big half of the foulbrood in the country, who buys no books and reads no journals, joins no associations and dumps 50 to 5,000 pounds of honey on the market at less than wholesale. The man who wants to start in beekeeping, as a vocation or avocation I shall help all I can; I mean the man, wherever he is, who wants to keep bees, a few colonies or many, year after year.

Iowa.

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## SPECIFIC GRAVITY OF HONEY

By F. Dundas Todd

The editor suggests that many readers would probably like to know what is meant by specific gravity, how it is measured, and what advantage it will be to a beekeeper to know the specific gravity of his honey.

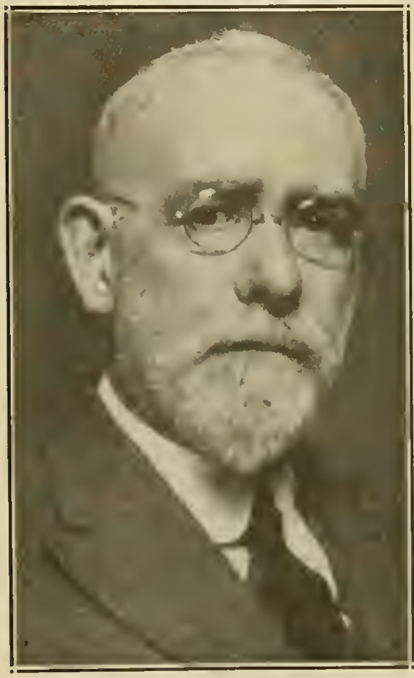
This runs along the line of progress, for in these days of exact measurements the time is coming when big buyers of honey will pay for it on the basis of its sugar content as definitely ascertained, not as guessed at in the present system, whereby a jar is tilted and honey is roughly classified as thick or thin according as the air-cell rises slowly or quickly. Some years ago, when a big baking concern bought honey by the carload, their chemist stated that all honey bought by the firm was tested for sugar content and paid for accordingly. It was the same in the recent "wet" period, all alcoholic beverages were tested for alcoholic content, and the amount of that was the basis on which price was calculated. The amount of water present was not considered at all, but flavor was an important factor, just as it is in honey, cheese and many other foods.

In the United States Pharmacopaeia, the authoritative book for all druggists in the United States, honey is defined as having a minimum specific gravity of 1.37, while the Canadian minimum legal standard is 75 per cent solids, or a specific gravity of 1.3790. For export abroad, as I pointed out in the American Bee Journal of May, 1920, the New Zealand Government honey graders refuse all honey with a specific gravity of less than 1.420, which is about 82 per cent solids. New Zealand honey as sold abroad has 10 per cent more sugar content than honey of the minimum legal standard on the North American continent, and ought to be worth just that much more money. I have judged many hundreds of samples of honey at exhibitions, and found them range from 75 to 84.6 per cent solids, a difference of almost 13 per cent between the two extremes, yet all producers expected to sell their honey at the same price, when as a matter of actual value the best was worth 3c a pound more than the poorest at prevailing wholesale prices. When the facts were plainly stated to the beekeeper who had produced the thick honey he at once saw the point, and used the data as a selling argument with so much effect that he got two cents a pound more for his crop than he had previously been asking, no small item on a total output of 6,000 pounds, being an actual gain of $180.

The specific gravity of a substance is simply the ratio of its weight to that of the same bulk of water. For instance, a cubic foot of water weighs 1,000 ounces, a cubic foot of brass 8,000 ounces—that is, it is eight times heavier than water, therefore its specific gravity is 8. A cubic foot of alcohol weighs 790 ounces, milk 1,030 ounces, glycerin 1,260 ounces, hence their specific gravities are .790, 1.03 and 1.260 respectively. It is merely the old story of adopting some one thing as a standard by which to measure a certain quality of everything else. We simply cannot measure a thing by itself, the noteworthy example of this absurdity is when we try to measure all minds by one, that is our own mind. If we could only devise some means of measuring a mind by something else we would unhappily realize the fulfillment of Burns' prayer:

"O wad some Power the giftie gie us
To see oursels as ithers see us!"

But it looks as if for all time we will be in the ridiculous position of being able to define insanity, but not sanity, that is: the negative condition but not the positive.



F. Dundas Todd

To weigh a cubic foot of any one thing would be quite a task, for the first problem woull be to get a block of the substance exactly one cubic foot in bulk, an almost impossible undertaking. So in practice, as far as fluids are concerned, a rather simple method has been devised based on the fact that in the case of an object lighter than water, one that will float, the amount of water it displaces will be exactly of the same weight as the object. For example, if we take a block of oak one inch square and 14 inches long, that is of 14 cubic inches capacity, and dip it in a vessel containing water, we find it will sink to a certain depth, displacing some water, and raising the water level until the weight of water displaced is exactly equal to that of the wood it buoys up. Now if we guide the wood to a perfectly upright position, we will find that it will sink to about 10 inches in the water, and has therefore displaced 10 cubic inches of the fluid. Therefore we find that 10 cubic inches of water are equal in weight to 14 cubic inches of oak. The latter then is, cubic inch by cubic inch, or cubic foot by cubic foot, just ten-fourteenths of the weight of water, or expressed in the regular form of a decimal fraction, 10 divided by 14 is equal to .714, the specific gravity of oak.

Our oak stick can now be used as a measuring rod for a great many other liquids. For instance, we may have a strong solution of salt in water, brine in fact, so we dip our oak stick in it and find it will sink only 9 inches. So 9 cubic inches of brine equal the weight of the stick, but so did 10 cubic inches of pure water, hence 9 cubic inches of brine and 10 inches of pure are equal in weight to each other. We might say that brine is 10-9ths, or 1 and 1-9th times the weight of pure water; that is, its specific gravity is 1.11. We could try the same experiment on honey, say a sample of well ripened honey such as is guaranteed by the New Zealand honey graders, and we would find that our oak stick would sink only 7 inches. Therefore 7 cubic inches of such honey would be equal in weight to 10 cubic inches of pure water, consequently the honey would be 1 3-7 times the weight of water, or, expressing it in proper form, the specific gravity of the honey would be 1.42.

Our block of wood is really a meter or measure, and as it is mostly used in water solutions, it is called a hydrometer. It has, however, a few drawbacks. In the first place it is rather bulky, necessitating a very large quantity of fluid to float it, then it has a rather nasty habit of trying to flop over. So the scientific world has devised something very much more convenient in the form of a glass tube containing some mercury or small shot in a bulb at the bottom of the stem so as to make it float vertically in any liquid. The depth to which the instrument sinks indicates the specific gravity of the liquid, which is recorded on the stem. We saw that our stick sank deepest in pure water and less in water containing common salt, so in graduating all hydrometers, zero is at the top.

Now we all know by practical experience it is utterly impossible to make a measuring rule that can be used with equal facility for determining the thickness of the smallest screw in a watch and the diameter of one of our British Columbia cedars, one of which I know to be 13 feet in diameter, 10 feet above the ground. There is quite a long range between pure alcohol with a specific gravity of 0.79 and the honey of my beekeeper friend with a specific gravity of of 1.443, so the usual plan is to devise a hydrometer for the special work in hand, where much has to be done, as for instance, determining the amount of alcohol in various brands of liquors in Government bonded warehouses.

Broadly speaking, there are two groups of hydrometers, one to use in solutions lighter than pure water, such as alcoholic beverages, oils, ammonia, etc., the other for solutions heavier than water, such as blood, milk, brine and honey. It is with hydrometers of the second group we, as beekeepers, are concerned.

When hydrometers were first devised the natural thing to do was to make the scale with equal divisions, and the Baume scale in use on the continent of Europe is so graduated. Experience ultimately showed that the relationship was more complex, so Twaddle devised a scale in which the divisions are not at equal distances apart, but closer together at the bottom, thus compensating the instrument. Users of a Baume scale necessarily have to refer to tables to learn what specific gravity is indicated by the observed figures, whereas users of the Twaddle scale simply multiply the reading by 5, place a decimal point in front of the answer, then place 1 for the specific gravity of water in front of the decimal point. Either scale is good, so long as one knows what one is doing.

Between the legal minimum of 1.37 and that of 1.443, the densest honey I have yet seen, the range on the Twaddle hydrometer would be from 76 to 88, or 12 degrees. The reading on a Baume would be from 41 to 85. In an ordinary hydrometer, such as is used in chemistry classes of high schools and by photographers, the graduation is generally from 0 to 80 on the Twaddle system, and therefore is not available for testing honey. Even if it were, the readings would be a little vague, as the 12 degrees essential would fall within the compass of 3-8 of an inch, much too close for fairly accurate reading. However, we can buy hydrometers that are adapted for a short range of work. For instance, a Twaddle number 4 is available for readings from 72 to 100, and on such an instrument the range of 12 degrees essential for honey occupies a space of 1¾ inches, enabling an ordinary individual to do fairly accurate work. This instrument is about a foot in length and is used in a test tube 10 inches long and 1½ inches in diameter. The one I bought in Vancouver for $1 I find was made by the Taylor Optical Co., of Rochester, N. Y.; the test tube, which, by the way, has a wide, solid glass base, cost 90 cents. Twelve ounces of honey load it very nicely.

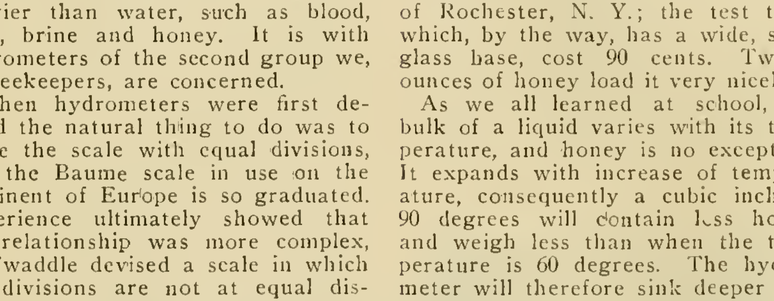
As we all learned at school, the bulk of a liquid varies with its temperature, and honey is no exception. It expands with increase of temperature, consequently a cubic inch at 90 degrees will contain less honey and weigh less than when the temperature is 60 degrees. The hydrometer will therefore sink deeper and read lower with honey at 90 degrees than at 60 degrees. Just to see for myself what the variation amounted to, I arranged for a test the samples of my honey I mentioned in my previous article as having a specfic gravity of 1.418 when tested by Mr. Dawson. So I loaded the test tube, inserted the Twaddle and let it sink, then slipped in a small thermometer, the kind sold by the Eastman Kodak Co. for about 35 cents. I found the temperature to be 52 degrees, and after half an hour's waiting, the Twaddle reading was 85.

The honey was far too thick for a fair test. We were having a little cold spell at that time, so I put a board above the furnace, placing on it the test tube with contents. Two days of this kind of thing gave me quite a variety of temperature. I found a fairly constant reading of 84.5 with temperature from 54 to 66, then 83.5 at 74, 82.5 at 86. Hence, if possible, read at about 60 degrees, and add 1 for each 10 degrees higher. So my own reading of my honey is 1.422, as against Mr. Dawson's 1.418, which is not too bad for a novice using an ordinary thermometer.

Next I took a sample of last year's honey, getting a reading of 85, with temperatures varying from 58 to 64, indicating a specific gravity of 1.425.

I am glad I spent $1.90 for this simple outfit. I have always tried to raise good honey, but never before knew in cold figures just exactly how it compared in sugar content, which is the one really measurable quality of honey, with that of good honey producers. Color, flavor and aroma are intangible, especially flavor and aroma. If year by year the Twaddle shows a reading of 84 or higher, with a temperature of 60 degrees, I will feel I have some reason to respect both my honey and myself.

British Columbia.



Russian prisoners of war at apiary of Mr. Alexeiev near Vladivostok

## RUSSIAN BEEKEEPING

By William Slovig

According to my promise, I send you photos of Russian apiaries.

We took them on our excursion at Parvaia Rietchka near Vladivostok, that we made for the special design of study.

No. 1. The apiary of Mr. Alexeiev. In the middle there is a trunk-hive, or "duplauka," as the Russians call it. The Coreans living in the neighborhood of Vladivostok excavate such trunks, daub the outside and inside of their entrance with honey and place them anywhere in the woods or field, where swarms are flying.

No. 2 shows the apiary of Colonel Smolensky, who now gets his living from the busy bees.

No. 3. Colonel Smolensky shows us one of his colonies. (First person left is myself.)

Though I wasn't fortunate enough to leave for home on board of the "President Grant," I hope to do so next month. According to the treaty of peace appertaining to that territory of Hungarian Banat, which was given to Rumania, I have to return to Rumania, whence I shall go back to Hungary to continue my studies in mining science at the academy which I frequented three years before the war broke out. That time of my sojourning in Hungary I will also devote to the translation and publishing of the "Hive and Honeybee."

Meantime I shall send you any photos concerning beekeeping which I may be fortunate enough to get.

Rumania.

### THE FLYING TIME OF A BEE

By S. H. Sabine

While out driving on a country road a short time ago I had the interesting experience of following a bee for nearly half a mile, and under such circumstances as to enable me to time its flight.

I was driving at perhaps 20 miles an hour, when I discovered her flying just ahead of me and to the right of the road. I slowed down the car so as to keep her in sight, and at the same time noted the speedometer, which showed a speed of 17 miles. She was flying parallel with the road against a slight breeze and in as straight a line as if following a beaten path. The only variation which I noted was that she darted up and down occasionally, sometimes flying ten or twelve feet above the ground and again settling down to about five or six, although the field along the roadside was level and there were no obstructions in her path.

I concluded the reason for the up and down flight was that the wind, being against her, carried her up like a kite, and then she would gradually settle to her former level.

I lost her at a turn in the road, as I had to follow the man-made highway, while she was following the invisible highway which, no doubt, led to some distant source of nectar supply.

On page 351 of the October number, following your answer to the question "Why do bees cluster before flying to their new home?" you ask for suggestions.

It has occurred to me that perhaps one reason may be that the old queen, not having been outside the hive for a considerable period of time, is not in any condition to take an extended flight, and stops at the nearest resting place to recuperate for a breathing spell.

Colonel Smolensky opening a hive. Wm. Slovig at extreme left.

This may be compared to a man who has been confined to his bed for a time and going out for his first walk. He would probably stop at the first street corner and lean against the fence for a few minutes' rest before going on.

This, however, does not seem to be the only reason, as a swarm with a clipped queen will cluster when the queen is not with them.

Dallas, Texas.

### THE NATIVE CHINESE BEE

By C. G. Golding

In "Beekeeping," by Dr. E. F. Phillips—MacMillen Rural Science Series—the author writes, anent "Races of Bees," on page 203:

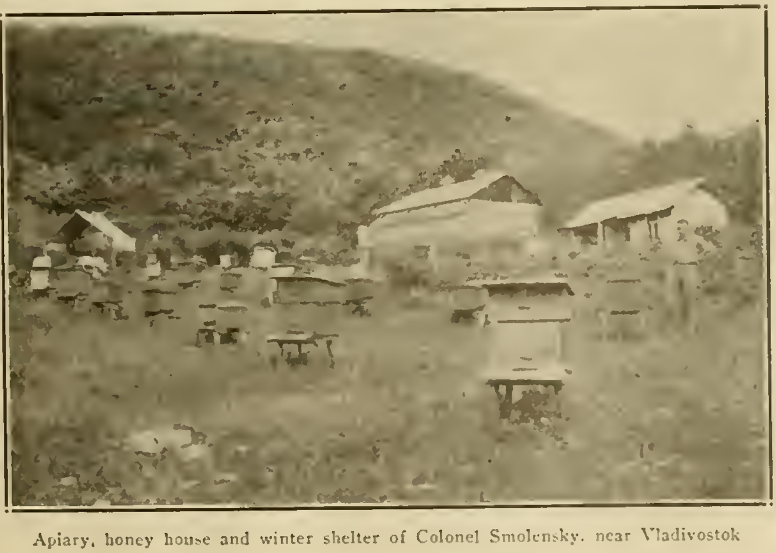
"Chinese-Japanese. These bees are placed by von Buttel-Reepen as subvarieties of indica. The Chinese bee has a heavy coat of long, dirty, grey hair; the Japanese bee lacks this."

Never having seen one, I am unable to contradict the von Buttel-Reepen description of the native Japanese honeybee, but I can state that this description of the Chinese honeybee is incorrect. Von Buttel-Reepen must have had the common Chinese wild bee in mind; this insect appears about the end of March, or beginning of April, and dies out by the end of May. During its brief lifetime, it appears to devote its attention almost exclusively to the broad bean (**Vciia faba**). The Chinese wild bee, which is a trifle larger than the native honeybee, and very thick in build, is covered entirely with a heavy coat of long, dirty grey hair. It does not, to my knowledge, live in colonies. In habits, it resembles the common bumblebee, which occurs throughout China. It would be interesting to learn when von Buttel-Reepen visited China, how long he was in the country altogether, and what province he visited.

Now for a short description of the Chinese honeybee:

In common with all honeybees, the abdomen consists of six rings. The top is marked with four bands, the first is a broad one and the remaining three are narrow. The bands on the average worker are dull yellow in color; those on young, or nurse bees are lighter yellow. The belly is yellowish brown. The head, thorax and legs are very dark brown; the top of thorax is thinly covered with a short yellowish-brown down, which is thicker on the sides and underneath. The queens are dark colored, and the drones are black. So much for markings. Now for traits:

The Chinese honeybee is, I opine, the gentlest of its kind in the world, and I never use smoke when handling a hive, neither do I wear gloves nor a veil. I often stand in front of a hive when examining the frames, and have never been stung when in this position. Not that the Chinese honeybee never stings; it can, and does sting like fury on occasion. A hive, however, can generally be opened between 9 a. m. and 5 p. m. without fear; but after 5 p. m. the bees almost invariably sting directly they alight on one. Chinese honeybees are good workers, never enter the wrong hive (except, of course,



Apiary, honey house and winter shelter of Colonel Smolensky. near Vladivostok when robbing), remain very quiet when being handled, cap their cells white, and winter well out of doors. Winter losses do occur, but I think this is the fault of defective hives. In any case, the percentage of such losses is not high—less than 5 per cent—for the Chinese honeybee is a very hardy creature. In regard to propolis, they certainly cannot be accused of using this lavishly. Burr and brace-combs do occur occasionally, but a knife soon remedies these defects. In regard to swarms, not every hive casts one. Eight of my colonies, although filled with bees, have not cast a single swarm within the past two years. Some hives cast one or two prime swarms a year, the first in spring, which as likely as not is followed in a few days by an afterswarm, if queen-cells are not cut out, and the second in Autumn (end of August or early in September), but I believe it is rare for an afterswarm to follow the prime swarm in autumn, even if queen-cells are not cut out. The average number of queen-cells found in a hive after the issue of a prime swarm is three. I have on one or two occasions seen four. I believe it is unusual to find more than four cells in a hive after a swarm has issued, although in one instance, in my apiary, when a virgin was lost on her wedding flight, the bees started six queen-cells. These, however, did not mature, for I gave the colony a ripe queen from another hive, and directly the virgin emerged she promptly tore down all six cells. The Chinese queen, however, is not all that can be desired in the matter of egg production. The rearing of brood is curtailed, sometimes entirely stopped, in a dearth of nectar. What age does a Chinese queen attain? Well, this is a question I cannot answer, but I have noticed a number of instances the queens were superseded after the working year. One thing must be said of Chinese honeybees: they keep their hives clean. The average colony defends its hive well, against both robbers and waxmoths, but a weak colony quickly goes under.

## SELFISHNESS IN AMERICAN HONEY PRODUCERS' LEAGUE

By W. E. Joor

Unfortunately, selfishness is not confined to the League, neither is it absent from among beekeepers. As a rule, I believe all **real** beekeepers are gentlemanly in heart, but in addition to beekeepers there are honey producers and keepers of bees who are out **only** for the coin there is in it; and they, as a rule, lose much that they might have, because they are not beekeepers. There is also much selfishness and petty jealousy in State and County Associations, and wherever such exist, they are a severe handicap to the organization.

I have known prominent honey producers who would not join or work with any association. They would not give any information they might possess to fellow beekeepers, nor to beginners, because they feared both as competitors. For them "the quality of mercy is strained."

I wonder how many of us would be keeping bees if we did not have the teachings of such men as Langstroth, Quinby, Miller, Alexander, and the Dadants? These men all made discoveries and inventions or worked out methods and freely gave them to others. Shall we not "pass it on?"

In "'Scientific Queen Rearing," Doolittle says: "All that I have done has been done with the hope that I might be of benefit to the world, benefiting some one by smoothing over the rough places a little the same as some of the writers of the past have smoothed the way before my tender feet, when they were still youthful in the pursuit of apiculture."

"As I have freely received of the good things in the bee literature of the past, so I as freely give of the little I know, that I may, in a measure, pay the large debt I owe to those who have preceded me in the way of our delightful pursuit.'

The very being of our country rests on the sacrifice of the individual for the benefit of the many, and the benefit of the one through prosperity of the many, "E Pluribus unum." This is the day of co-operation. The United States is a co-operative concern, both as between States, and between individuals and other units.

We must have sectional (State or otherwise) co-operative organizations and these should combine into a national concern, the American Honey Producers' League. If any special interests or sets of men try to exploit it for their benefit, it will be a failure. The interests that must work unselfishly in the League are the manufacturers, the honey dealers, the journalists, the educators and also the producers themselves. Any of these classes, by attempting to dominate or by striving to exclude the other, will cause injury.

There is another form of selfishness that can cause serious injury to the project. This is well expressed in the slang phrase, "Let George do it." Such is the man who refuses to join, or help in the work, but who is perfectly willing to sit by and receive more money for his honey and other benefits; to sit in meetings and absorb all the information he can, but never gives any himself; to use the inventions and methods of others, but does not help others at all.

The objects of the League are so broad that when it is functioning normally every beekeeper will be benefited. Some of these are:

1. The standardization of equipment or the reduction of the number of different types of equipment to be manufactured, and also carried by the dealers. There are several types of comb-honey supers and as a rule these are not suitable to use as extracting supers. If we use sections (as I suppose we always will), we could use a section that could be used in the standard extracting super with "T" tins (a la Dr. Miller) and thus have a super that could be used for shallow extracting frames.

2. The standardization of race markings for bees. There is no accepted standard at present.

3. The definition of what is meant by a pound of bees; a one, two or three-frame nucleus; a full colony.

4. The influence to secure just freight rates; uniformity in regulations regarding disease control; shipping bees and queens; power to contest unjust laws.

5. Universal advertising campaign; assist beekeepers in buying supplies and in selling their products.

6. The promotion of broader education in apiculture, and research along lines of general interest to beekeepers.

Sectionalism and sectional selfishness must be held down and all actions taken in a broad spirit for the best interests of the beekeeping industry of the whole country.

But a reasonable selfishness, if such a term is permissible, is absolutely necessary to make the League a success. Does that sound paradoxical? Well, it's so. Man, the average human, is, in a sense, inherently selfish. How can that trait be made useful in the working of the League?

By making the League an organization of service to the individuals of its member associations and the allied traders, this selfish trait can be made especially useful. The trouble with the old National was that it was too altruistic and theoretical (without teeth, as some would have the League of Nations) and of no practical use to its members. The result was that no one received any direct, definite benefit, and where no definite benefit was visible the beekeepers refused to part with their money, and gave the National very little thought, and less support. Also it was too expensive for individual members from all the States to gather at a single meeting place, and the meetings were almost the only benefits.

In the League plan, representatives of member associations, chosen by those associations, gather together, like the United States Congress, and transact such business as may be timely. These representatives should and will, if they carry out the constitutional objects and policies of the organization, set machinery in motion that will be of direct aid to individual beekeepers; thus making the human selfish trait a means of drawing support. Care must be exercised that these benefits be for all individuals, whether producer, manufacturer or dealer. It must be an association for the industry at large and not for special interests or sections.

Texas.

## SOURCES OF KANSAS HONEY

By A. V. Small

South central Kansas is very different from the white clover region. Alfalfa is the main source of honey with considerable sweet clover in some localities. There is considerable sweet clover seed raised here. As a source of surplus it is rather uncertain, as the dry weather very often sets in before the plant has a chance to bloom. Last year I secured some of the white annual sweet clover seed and found that under our conditions it cannot make a successful growth. I have received from the American Bee Journal a package of the white biennial, which ought to do exceptionally well in this locality. Last year I planted half a bushel of unhulled yellow biennial along the roads and have engaged a bushel to plant next spring. The soil is rich in lime.

For several years I kept bees in Topeka, within a quarter of a mile of a large alfalfa field. It was very exceptional for bees to work alfalfa at Topeka, and I did not list it as a honey plant. Coming out here where it is the main source of nectar, I was very curious to know just what made the difference and at just what place between here and Topeka was the dividing line. After a careful study of conditions and careful weather charts and after running for hundreds of miles up and down the streams, I find that in this part of Kansas alfalfa above 1,000 feet elevation is one of the main honey plants, and below that level it is one of the minor plants. It yields practically nothing at somewhere between 800 and 900 feet. It is surprising how sharp the line is drawn.

Alfalfa is a clover, and while it thrives under conditions where white clover cannot grow, the nectar secretion responds to heat and moisture very much as does white clover, after the bloom is once out.

Another rather interesting thing that I find is that the smart-weed of this locality is an entirely different variety from what we have at Topeka and at St. Joseph Mo., and the honey is very different.

Augusta, Kans.

## WINTERING

By A. E. Hale

I winter on summer stands, each in a separate case. Use a bottom-board two inches longer than the hive body, with the seven-eighths inch space under the frames summer and winter.

About November 1 I prepare for winter by nailing a metal entrance guard to the front of hive, leaving an opening 5-16x6 inches as a protection from mice.

I make the guards of light galvanized iron, cut 2 inches wide and 14 1-2 inches long bent over 3-8 inches at top so as to make it double where nailed to hive. Use the escape boards on top with cleat side down, thus leaving five-eighths or three-quarters of an inch over top of frames. Tack a piece of wire screen over the hole in the escape-board and cover with a piece of burlap. The cases are made of seven-eighths inch stuff for the frame, covered with 1½ ply roofing paper, tacked to frame with bill posters' tacks. Use 36-inch paper cut in two, 18 inches wide. The inside measurement of the bottom of the frame is one-fourth inch larger than the hive-body and slips down to its place without moving the hive and rests on the 2-inch projection of the bottom-board in front and on a cleat one-half inch thick, nailed on back end, projecting about three-eighths inch above bottom-board, and covering joint between bottom-board and hive-body and preventing the hive from slipping back when raised in front to examine or clean out. The side pieces of frame cover joint on sides. As the end pieces are nailed on top of the sides of bottom of frame the paper projects seven-eighths inch below ends, closing the entrance to wind and snow except a piece about 4 inches long, which is cut on sides and turned upward for an outside entrance. There is a space of 2 inches on sides and ends of hive-body and 8 inches on top which is packed with leaves; and when taken off in the spring we save the leaves for future use. The packing is left on until settled weather in May. The rims of the covers are 3 or 4 inches wide to telescope over the top. The top of the cover is made of thin stuff, covered with roofing paper. The paper costs me about 30 cents per case. For the frame and top I use old crating and boxes. If bought new the lumber would cost 30 to 40 cents each.

Iowa.

### Wintering

At the meeting of the Des Moines County beekeepers at Burlington, Iowa, October 20, Mr. Wm. Judd, of Danville, Ill., who succeeds wonderfully in wintering bees safely, gave his method. He packs his bees very heavily in clover shaff, with about 8 to 10 inches of packing. Instead of wintering the colonies in one story, he places two stories and divides the comb half and half, 5 in each story, with the balance of the hive packed, behind division-boards. This has the advantage of supplying the bees with a large amount of stores above the cluster, so that they do not need to move sideways in cold weather. He packs only two hives in one winter case and leaves them on the same spot all summer. In this way he avoids the "drifting" of bees, which is always to be feared when moving them together at the approach of winter. The attendance at the Burlington meeting was small, but the beekeepers present were very much interested and well pleased.

### Length of the Sting

The British Bee Journal quotes the following from "Punch":

"The length of a bee's sting is only one thirty-second of an inch." We are grateful for this information, because when we are being stung we are always too busy to measure it for ourselves.

# BEEKEEPERS BY THE WAY

### A Man From Tennessee

Prof. G. M. Bentley, of the University of Tennessee, is a worthwhile chap, no matter which way you approach him. He gives one the impression that Tennessee is the garden spot of the world, and you can't much blame him for that, even though you believe that Indiana—or Texas, is better. Judging from the picture, Bentley is a thorough-going horticultural inspector, at least a judge of good melons.

He takes beekeeping seriously and is making it an important subject in his branch of the University. Last year he had a class of 67 returned soldiers in his beekeeping classes. It is as Secretary of the Section of Apiculture of the Association of Economic Entomologists that Bentley gets in his best licks for the industry. Many of the members of this organization are officially responsible for the enforcement of foulbrood laws as well as for teaching and extension work in beekeeping. Since Bentley has been Secretary, the apicultural section has been looking up decidedly. The programs are confined to such problems as are likely to face the members in their official capacity and must come under one of the three heads of research, education or inspection.

When you see Bentley just tell him you are a beekeeper and he will be glad to see you, but he will probably invite you to move to Tennessee.

A Tennessee booster.

## TREES FOR HONEY

By Elias Fox

In the December issue, "Best Trees for Shade and Honey," by accident or otherwise, the box elder is omitted. It is one of the very best from the beekeeper's standpoint. It is a fast-growing tree, with spreading branches and dense foliage, providing a quick and beautiful shade. Since it is a species of maple it can be tapped in early spring and will provide a liberal flow of sap, which can be boiled down to a delicious syrup, or even to sugar. It requires an expert to detect it from maple sugar or syrup.

The tree blooms profusely and yields as much pollen and nectar as the maples. Sometimes a liberal supply of honeydew is secured from the foliage. Pollen, nectar, honeydew and sap provide really four crops in the season. Blooming early, it furnishes very material aid to the bees for brood-rearing, thus providing a field force to gather the surplus crop later in the season.

## A SERIOUS MIS-STATEMENT

L. A. Schott, a Missouri reader, sends us the following clipping, which is reported as coming from the Journal of Agriculture, published at St. Louis:

### Honey From Grapes

"In the vicinity of Jefferson City, Mo., during the past season, beekeepers obtained a much larger yield of honey than usual, but did not know from whence the surplus came, as the supply of nectar-bearing plants was not in excess of former years, until owners of Concord grape vineyards went out to gather their fruit and discovered that most of their grapes were not as plump and juicy as they should have been and they were at loss to account for it until they kept a watch and noticed that bees swarmed into the vineyards and settled on the grapes.

"Beekeepers also soon discovered that they were getting more honey than usual. The result was that grape owners had but little left with which to make jams, jellies and grape juice, while the beekeepers had not only a surplus of honey, but will in future be able to profit by the experience and obtain an additional nectar supply for their bees by the cultivation of grapes as a sideline of their business.

"When the fact is considered that the value of the increased production of honey from the grape juice far exceeds the reduced value of the grapes, it will be seen that grape raising in connection with beekeeping cannot fail to be very profitable."

The Journal of Agriculture should refer articles similar to the above quotation to some practical man before allowing them to appear. Grape juice has never made anything but wine, and has at all times caused disease and winter losses among bees. We know this by experience. Damaged grapes are originally injured by birds, or cracked open by wet weather, and when the bees come and get the remnants, the juice is usually already fermented and causes them to die, often before they can reach the hive. We have had hundreds of colonies of bees and 12 acres of vineyard at the same time. The season of 1879 was the hardest we ever saw on bees and grapes, and we positively know that there is no profit for bees in feeding from the damaged grapes. The shape of their mandibles prevents them from puncturing whole berries.

## THE BOX ELDER BUG HEARS

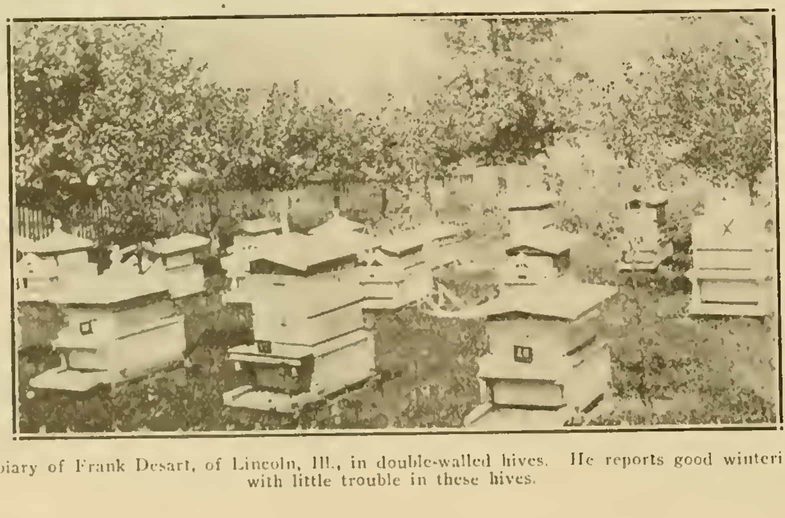
In regard to "How Butterflies Hear" on page 377, November issue. Late last summer I noticed box elder bugs clustered in knots on the bottom of the trees, so shouted at them one day, and, to my astonishment, they scattered.

Several days ago I captured one in the house and made a sharp sound at him, and he jumped. So I deprived him of his antennae and repeated the sounds, at which he would not move. Another thing that must go to prove the antennae contain the organs of hearing is that the bee and box elder bug generally live in clusters, and the butterflies, spiders and moths do not live in clusters.

The reason it cannot be proven that the bee hears is because it is not as cowardly as the box elder bug.

M. Earl Townsend.

Nebraska.



Apiary of Frank Desart, of Lincoln, Ill., in double-walled hives. He reports good wintering with little trouble in these hives.

## WINTER JOBS

By Arthur C. Miller

For the fortunate few who can toast their shins before the crackling wood fire, let me suggest a few things worth doing. They may scoff now, but when hot summer comes they will wish they had listened and heeded. Get ready to make more money next year, or, in other words, to save labor, trouble and stings, to be able to do more in the hours at your command or to do all you have to do and time left over to loll in the hammock and enjoy that fine smoke—from your bee smoker, of course.

It is surprising the amount of lost effort which is due to out-of-order hives and other apparatus and to appliances which do not match or fit. Let me tell you specifically some of the things to look for and correct.

First, overhaul your smokers, clean out accumulated creosote and soot, renew the bellows leather if cracked, or moisten and soften with water if it is hard and stiff, and while it is soft and damp, rub in a liberal dose of neatsfoot oil, mutton tallow, or any good oil or grease. The smokers are the most important tools the beekeeper has, and the inspectors find many more poor and ineffective ones than good ones. If you need new smokers, order them at once and get good big ones, the little ones are only toys, and like the Yankee's razors, are good just to sell at a low price.

Next buy, or have made, several good hive tools, enough so you can keep several in each yard. One fully realizes what a useful article a good hive tool is when one has lost it.

Another essential is a good bee-veil, and one made of wire cloth is the most satisfactory in the long run. One something like the Alexander veil is good, but is much better if a hat forms the top, then it does not slip about on the head. Better have the wire cloth wide before the face and narrow at the back of the head, then if you tip your head up to gaze into a tree top the hat does not push down over your eyes like an extinguisher. And be sure and have the cloth "skirt" below the wire amply long, so it will tuck in under the vest or coat securely, or fasten with a tape, as your fancy dictates. Keep one or more veils in each yard. Better more than one.

Go over all the empty hives, supers, honey-boards, escape-boards, etc., renailing where necessary, and in the "naughty corners," put screws. While going over these things cast aside for kindling all odd-sized things. "A waste," you say. Not nearly as much waste as the time lost in busy moments of summer, trying to adjust misfits and plug up leaky corners and edges.

When all hives, etc., are repaired, scrape out all propolis. Enough of it accumulates in one season without carrying over any from the last. The delay in handling bees due to a mass of propolis is scarcely appreciated till one handles hives free from it.

All this wooden ware costs good money and new will cost more, so conserve it by painting it well. To be sure, some of the good men of the craft have long advocated no paint, but in those palmy days hives did not cost much and the lumber was good. Wonder if those people do not now wish that they had kept those fine hives well painted.

When going over the hives for repairs, stack the combs where you can get at them readily and, while the paint is drying, look critically at every comb; discard every one with many drone-cells, or stretched cells, or warped, or buckled places. Scrape all the propolis from the frames just to facilitate handling next season as well as to ensure accurate spacing. Combs with only small patches of drone-cells can be repaired. Cut ou such places, taking out a rectangular piece, scrape from the base a row or two of cells about the opening thus made, lay in a piece of foundation and with a brushful of melted wax make it fast. Such repaired combs are not as fine as new combs built from fresh foundation, but they are valuable when built combs are needed.

When discarding whole combs, cut them from the frames, wire and all, and re-wire with No. 26 wire, stretching it tight; then put in the new foundation, embedding the wires carefully, preferably with an electric imbedder. No matter how carefully you adjust the wedges at the top, it is worth while to run a little melted wax along the tip, because it prevents an occasional slip, and the bees fasten the top sooner than they otherwise would.

After all the foregoing is done, go at the new goods, which by that time should have arrived. It will be found profitable to dip in linseed oil all bodies, supers, honey-boards and escape-boards, allowing the excess of oil to drain off. This is quicker than a priming coat of paint, and far better.

There is one other small item worth mentioning: Attend to gummed-up bee-escapes. Drop them into a boiling solution of strong lye with a liberal dose of powdered soap. Why the soap? Well, it helps separate the gum from the metal and makes a cleaner and slicker job.

Much of the foregoing sounds like "old stuff," I know, but if one may judge by the mess one finds in so many yards, it will stand a lot of repeating. Winter time is a slack time and does not yield much cash, but it can be turned into cash via time and labor saved in operation during the rush season.

Providence, R. I.

## THE DADANT SYSTEM OF WINTERING BEES

By A. E. Burdick

I have just finished reading the new manual: "The Dadant System of Beekeeping."

With a few exceptional hives all my beekeeping experience has been with Langstroth hives; however, I use, both summer and winter, two brood-chambers, 16 or 20 frames, and think of the two combined as a hive.

I am in thorough accord with the principles involved in the large brood-chamber, as exemplified in the Dadant hive.

For a number of years I have entertained the belief that the brood compartment of a hive should be large enough to hold a reserve stock of honey, or residual honey, a credit balance that would never be needed except in the unusual or extremely bad season. Due to the fact that the bees' cluster is nearly spherical, my imagination pictured this hive as nearly cubical.

Hives have been constructed in conformity with standard lumber dimensions, rather than in conformity with the natural requirements of the bees. The lumber dealer and not the bee student decides the depth of our brood and surplus frames. The pattern has been made to fit the cloth, with little or no consideration for the physical well-being of the wearer, and with this clothing and equipment the bees have demonstrated a marvelous adaptability.

I was particularly impressed with the conclusions reached in "The Dadant System" regarding the wintering of bees, based as they are on long years of patient experiment, and they have my fullest indorsement.

With no desire to be pedantic, I believe there are three essentials that must be understood and observed in order to avoid severe winter loss in this climate:

1. Quality and quantity of food for winter stores.
2. Quality of the air, or ventilation.
3. Protection from the elements.

Putting bees in packing cases does not appeal to me, especially those cases that provide a thick layer of sawdust on all sides of the hive. It is based on the erroneous idea that they will provide a steady warmth. They are in reality a small ice box, the cold gets into them very slowly and it is, if anything, slower in getting out. In other words, when the cold gets in, it has come to stay, like an unwelcome mother-in-law, and, as pointed out in the little volume, the bees are likely to miss the only opportunity for a cleansing flight; with no opportunity to smooth out their bed and rearrange their stores, disease, disaster and death are at hand.

Assuming that these packing cases do not become refrigerators, and are in reality little hot-houses, then another equally vicious horn to the dilemma is presented. We have brood-rearing out of season.

A few winters ago, a beekeeper with 40 or 50 colonies, living in a neighboring city, packed all his hives individually after the ice-box plan. Over half of them died outright before spring, and those that survived were weak. Just over his fence a neighbor had one lone colony of bees, provided with a makeshift flat cover which had blown off early in the winter, leaving a gunny sack as the only protection above the cluster. This cover stayed off all winter, and the beekeeper said, in relating the circumstances to me, that they were a strong, vigorous colony in the spring. If the alternative confronted me of leaving my bees with only a gunny sack cover, or placing them in boxes well lined with sawdust, I would unhesitatingly choose the gunny sack.

Under the erroneous idea that cold is the worst enemy of bees, sealed covers have been provided and the bees literally exist in their own effluvia and, like a strong constitution that sometimes combats ill-advised drugs and a blighting disease and overcome both, so the bees often survive pernicious but well-intentioned measures provided for their welfare. These packing-box and tight-cover fellows, with no knowledge of biology, will stigmatize the rest of us by saying that we neglect and do not provide for the comfort of our bees.

H. P. Hinds, of Wabash, Nebraska, has found his fifty colonies so profitable that he expects to increase to 150 next season.

We have observed that bees by preference store their honey over and above the brood-nest. We take advantage of this fact and place empty drawn comb at that place. To the same extent that nature abhors a vacuum, so the bees abhor empty comb at that place, and strive to fill it with all their splendid energy; but if possessed with reason, they would see the futility of trying to fill a hole that was continually being prepared for them by the apiarist, and continually emptied.

We grope about without success to find attributes in the bees that correspond with memory, reason or volition in ourselves, and try to satisfy ourselves by saying that all the various phenomena of the hive are purely reflex, excited by various stimuli, all mere verbiage to obscure the poverty of our minds.

"And as imagination bodies forth
The forms of things unknown, the poet's pen
Turns them to shapes and gives to airy nothing
A local habitation and a name."
—Midsummer Night's Dream.

Washington.

We do not believe that the packing case should be condemned as positively as our esteemed correspondent does in the above article. Between the ice-box which gets cold and stays cold, and the hot-house packing case, there is a middle line; a packing case which simply conserves the warmth of the bees and is heavy enough to keep the bees comfortable. Sawdust, to our mind, will never do, as it is indeed a refrigerator packing in very cold seasons. But many of the packing cases now used preserve the heat of the cluster without furnishing undue warmth. That we do not use them ourselves, because of their cost, should not deter beginners from trying them. Wintering bees is, more than any other part of the management, a question of locality.—Editor.

## HONEY AS A SALES PROMOTER

By Smith C. McGregor

Many apiaries that yield a generous supply of honey are not the sole business of their owners. Perhaps garden truck or poultry furnishes the balance of the income. In such cases, the honey is often disposed of without due consideration of its value as a sales builder for the other products.

If you are a part-time beekeeper, you may think you haven't time to devote to honey selling campaigns. If you want to market it to better advantage, and seek methods of time-saving in the care of the bees, why not try time-saving devices?

Time can be saved in dozens of places in the apiary, and the ones who do save it are usually those who make a success of their honey sales. Does the actual sale of honey end the transaction? If it does, you are missing one of the chief benefits of the apiary.

Most business men feature one line or article that they have explicit confidence in. The profit on the actual sale of the featured article may not be worth the trouble involved; but the other articles sold, because of this first sale, bring in the profit. It is much the same with honey. If you have confidence in your product, why not let people know about it, calling their attention to anything else you wish to sell at the same time?

Perhaps you have sold your honey without difficulty; yet other farm products wasted because you could not find buyers. At the same time, many of your honey customers would have purchased the products you lost, had they known you had them. Market your honey in a special container, thus making it an attractive advance agent for your other products.

Take the 5-pound pail, for example. This is a convenient size for the small family, or for those who are buying for the first time. A good, attractive label on it reading, "This Honey is Only One of Our Products. If You Like It, Ask for Them," would let the buyers know you sold additional produce, and an advertising tag on the pail would list the seasonable bargains you offered.

Quality advertising labels and tags cost more than those of inferior quality; but if the honey is good, doesn't it deserve a good label? Indeed, people are getting so they judge a product by its advertising, and if they are pleased with the original purchase they will give preference to your line when they make additional ones.

It is as a trade promoter that honey brings its real profit; the 5-pound pail will not add much to your bank account, but if it lands the farm produce trade of the family who bought it, that is worth the time involved. Housewives are not bashful about telling about bargains, and honey is a good subject for gossip, especially if it is high grade enough to please the critical.

Do not expect the honey sales to provide an immediate outlet for all your other produce, for they cannot bring this about at once. But if you have confidence in your products, and wish to build up a permanent trade, it will be worth your while to give more attention to the marketing of the honey. If you are not in direct touch with a town or city, the parcel post system makes it possible for you to try it from your home. You can save the consumer money, and the increased sale of your other products will make it worth your while.

New York.

## MOVING BEES

Reading about moving bees in the December number of the American Bee Journal, I thought I would tell you of my experience this fall. I moved 56 colonies of bees in two wagon loads, with covers nailed down tight and wire screen nailed over the entrance. The bees were moved nine miles over rough roads, but came through fine, had their flight and are now in the cellar. Had springs on the wagon to take up the jar.

Thos. Dildine.

Minnesota.

(While bees can be moved in this way in cool weather, they would smother in hot weather without more ventilation.—Editor.)

## COREOPSIS AS A SOURCE OF HONEY

By Charles B. Shortlidge, M. D.

Along the Delaware river, on its islands and in the swamps adjacent thereto, grow two flowers of the same order, **Compositae annuals.**

People call them the yellow flower and coreopsis. They are called coreopsis because the seeds resemble a bed-bug, and coreopsis is Greek for bed-bug. (**Coris**, bed-bug; **opsis**, appearance.—Editor.)

They belong to the same family as Spanish needle, but the seeds do not stick to the clothing like the former and are easily brushed off.

I give the true botanical names:

**Bidens trichosperma,** much divided leaf; also sometimes commonly called the tickseed sunflower. This plant grows in bush form about 5 feet high. I grew a specimen in my yard in a shady location, 8 feet high. This is the main honey plant blooming from August 20 to the middle of September.

**Bidens laevis,** nearly entire leaf, base of which grows around the stem of stalk from which it grows and narrow. Also is commonly called showy hue marigold. It grows about 2 feet high and starts to bloom about the last of August. It requires a damper location than the first named variety and is not so wide spread.

In Delaware county and adjacent sections of Philadelphia county, near the river, for a mile inland, there are several hundred acres of more or less swampy land, where the tall variety is very plentiful.

I was informed by good authority that these plants are found along the Mississippi river and in Florida.

For the past six years I have moved from 30 to 100 colonies of bees 14 miles to catch the flow. Three different beekeepers of Lancaster county moved 18, 30 and 100 hives from 40 to 59 miles to do the same, and others shorter distances.

I have averaged 20 pounds of extracted honey per colony and 25 pounds left for the bees to winter on. A complete failure of the flow has never been known by beekeepers living there.

The honey is the color of melted butter, light yellow, and has the characteristic faintly spicy odor or flavor of the blooming flowers.

I am scattering the seeds in swamps near by and hope some day I will not have to move my bees, but have flowers enough near home.

Last season I had my bees on Tinicum Island, in sight of the great Hog Island shipyard.

Pennsylvania.

# THE EDITOR'S ANSWERS

Questions are answered in order received. As we receive more questions than we can answer in space available, two or three months sometimes elapse before answers appear.

### Wintering in Southern California—Cross Bees

1. Should I, in this climate (Southern California), take off the supers? Would it do any harm to leave them on over winter?
2. Would it not be better to contract hive entrances during cold weather, and about how many inches should be open?
3. I have one colony quite hostile, but lots of honey. CALIFORNIA.

Answers.—1. Having never practiced beekeeping in Southern California, I should say, like Dr. Miller: "I don't know." However, since a reply is expected, I will suggest that, if the supers are removed, put into a moth-proof building and fumigated, the colonies will be better off without them, until the opening of the crop. Besides, if any of those colonies should happen to become weak, there would be much more danger of the moths damaging the combs on such a hive than in a good honey house. So the answer would probably depend upon the accommodations at hand.

2. It is always best to contract entrances in a time of dearth, to prevent accidental robbing. But the size of the entrance should be according to the strength of the colony, and it is impossible to give that as an invariable rule.

3. A colony of cross bees should be deprived of its queen and a queen given it of a more gentle breed Sometimes, however, cross bees are made so by mismanagement or by being exposed to the attacks of other bees, when there is no crop.

### Two Queens in One Hive

I note in the Journal an editorial which states "more and more we are getting reports of two queens in one hive."

Here is another: I have a colony that I know positively has had two queens in it for the last two months, that were still in there the last time I looked.

On one occasion I saw the old queen (which is clipped) and her offspring within one-half an inch of one another, apparently very peaceable and contented.

I raised a few queens in second story earlier in the season, which may have gotten the workers accustomed to more than one queen in the hive.

I would like to know now if the two queens will survive the winter

On account of our first light frost killing goldenrod and tender plants in early October, my winter stores are not as plentiful as I would like. Our first real frost was October 29, temperature dropped from summer heat to 29 degrees. A late spring will call for lots of feeding. KENTUCKY.

Answer.—Whether the old queen will survive the winter is a matter of opinion, for we "don't know." But it is probable that the old queen will disappear in some way. Evidently neither the workers nor the young queen consider her any longer as a queen, and she probably does not lay.

It is somewhat strange that frost should have killed a part of the vegetation in early October, at Louisville, on the Ohio, just above the 38th degree, when it did not kill anything at Hamilton, on the Mississippi, just above the 40th. Those are some of the freaks of temperature. We had tomatoes ripening on the vines till October 28.

### Honey for Feeding--Stings

1. Will honey from Texas and other States be safe to feed bees in winter, or is there too much danger of foulbrood?
2. Can it be heated enough to kill the germs?
3. Is the bee sting in the ear or on a blood vessel dangerous? Has it proved fatal, to your knowledge? OKLAHOMA.

Answers.—1. I would not, under any consideration, feed to bees honey of which I did not know the exact source. In many cases this honey would be safe, but the risk to run is too great.

2. Yes, if you heat it, and keep it at the temperature of boiling for half an hour, we are told by those who experimented, that it kills the germs. But such honey might not be very good for wintering. Sugar syrup would be safer.

3. Of course, a bee sting on a blood vessel will diffuse its poison faster than in the muscles; but as there are blood vessels all through the body, the sting on a large blood vessel will not increase the trouble, but will probably make it a little more acute at first. Stings reaching a nerve are probably the most painful. But the very few people who have been stung with fatal results have probably been stung a number of times at the same moment. Probably a doctor could give a more positive answer.

### Top Entrances

1. Do you know of any experiments with top entrances? How would bees clean up from the bottom, then?
2. What drug in food would act as a laxative? I am experimenting with a case of mild Isle-of-Wight disease and think aperient treatment would be good. ENGLAND.

Answers.—1. Top entrances have not usually proven satisfactory for the very objection which you raise.

2. A laxative, to our mind, is perhaps needed to cure Isle-of-Wight disease, but we doubt the efficacy of anything of that kind. A tonic would perhaps act well towards preventing the coming of the disease. At any rate, we would try a tonic if we were in a Isle-of-Wight locality. The Italians recommend a tea of rosemary, cinnamon, ginger, saffron, thyme, etc., boiled in water and mixed in honey.

### Cleaning Combs

Is it necessary to return combs to bees to clean out?

I had American foulbrood, two cases of it, and am afraid to let the bees clean them. I usually extract the combs the second time, and that leaves a very little honey in them. INDIANA.

Answer.—We usually return the combs to the hives to be cleaned by the bees, immediately after extracting, or the same evening. Some people give them out to the bees, in the open. This method would be deadly if there is any trace of foulbrood. To avoid the spreading of the disease, the only way is to return to each colony its own combs, so that there will be no increase of danger of contagion, to any other colonies than those already contaminated.

Whether there is much or little honey left in the combs, there is always a danger if there is any disease at all. It would perhaps be best for them to be cleaned before winter, as the honey left in them would not run the risk of spreading the disease in spring, since it might be consumed. But it is now too late to do anything of the kind. If you treated your bees and did away with the disease, there is a probability that your combs are immune.

### Carbon Disulphide

Will honey in comb that has been treated by carbon disulphide, to kill the wax moth, be poisonous to eat? MISSOURI

Answer.—Although we have never made a positive test of this, I do not hesitate in saying that those combs and the honey in them would be perfectly safe to eat, for the very simple reason that it is the fumes that kill the insects and those fumes evaporate readily. Moreover, I find in the "United States Dispensatory," 19th edition, the statement that the disulphide has been used "in diarrhea, in a 3.5 per cent solution, a dose of which is two tablespoonfuls four or five times a day."

The disulphide is very volatile, so that it vaporizes rapidly, therefore very little of it, if any, would remain on the surface of the combs. When we add to this the fact that comb-honey, when treated, is usually sealed, we can see no danger whatever in its use to asphyxiate the moths.

It is unnecessary to add that the liquid carbon disulphide is not intended to be used internally. The man who would use it would be on a par with the good woman who bought "bedbug powder" to kill the bedbugs that annoyed her sick husband, in bed, and after having treated him to a dose of it, was very much astonished that it should have made him sick, while "it did not seem to affect the bedbugs."

### Building Up Nucleus

How many pounds of sugar would it take to feed a three-frame nucleus to enable them to build up to a six-frame colony in as short a time as possible, when there is no honey flow on? MISSOURI.

Answer.—This cannot be done without permitting the bees to fly each day, the amount of sugar necessary is problematical, for bees will find honey while they are hunting for pollen. They need pollen as well as honey. The quantity of sugar needed will therefore depend upon the conditions of the field. The warmth of the atmosphere will also influence the result. In cool weather the bees would consume a great deal more than in warm weather. They would also spread the brood less readily in cool weather. So you will see that an answer given in pounds might lead you astray.

### Laws in Illinois

1. What are the laws of Illinois in regard to taking bees into the State? Do bees have to have a certificate of inspection?
2. If I should want to ship bees to New York State, 500 miles, can I ship them by freight in December? My hives are all double-wall dovetailed hives. ILLINOIS.

Answers.—1. The State law, as far as we know, does not forbid the introduction of bees into the State. But it declares diseased bees and their appurtenances a "nuisance," and any one who sells, barters or gives away bees that are diseased exposes himself to a fine. It would evidently be the same for the man who imported diseased bees into the State.

2. Do not ship bees by freight to any great distance, unless you go with them, or ship them in carload lots. If you want to ship bees to New York State, better send them by express, if there are not enough of them to make a carload.

# ODDS AND ENDS

### Inspectors' Meeting

A meeting of the Apicultural Inspectors of the Upper Mississippi Valley was held at Chicago on December 6, at the request of B. F. Kindig. Uniform methods of inspection and certification were discussed. The States represented by the official Apiary Inspectors were: Michigan, Wisconsin, Minnesota, Illinois, Indiana, Iowa, Ohio, New York and Ontario.

### Collier to Move

W. C. Collier, long of Goliad, Texas, is making arrangements to move to Hillsboro, in Hill County, in the cotton belt. We understand that he expects to combine the shipping of live bees with production of honey. Collier is one of the well-known Texas producers, prominent in the affairs of the Co-operative Association of that State.

### Bees Go to Store for Honey

A New York newspaper recently gave an account of a case where the bees found a way into a store where comb honey was kept on open shelves and carried away a goodly portion before the owner was able to shut them out.

### California Meet

The thirty-second annual meeting of the California State Beekeepers' Association will meet for a four-days' session March 1, 2, 3 and 4, 1921, in Oakland.

Cary W. Hartman, President of the Alameda County Beekeepers' Association and Chairman of the Program Committee for the annual meeting, writes that they expect to make it the biggest and best meeting in the history of the organization. The Chamber of Commerce of Oakland and University of California at Berkeley, joined with the Alameda County Beekeepers' Association in their effort to get the meeting place at Oakland, and were successful.

Mr Hartman is anxious to get in touch with beekeepers from the East, who expect to be in California at the time, so as to see they are supplied with literature and in every way kept informed in reference to the meeting.

On the program will be found the leading beekeepers of the West, as well as some of the best from the East. Those interested can have programs mailed to them as soon as they are off the press, by addressing: Cary W. Hartman, Chairman Program Committee, 400 Hutchinson Building, Oakland, California.

### A Notable Meeting

The Chicago meeting of the American Association of Economic Entomologists during the holiday vacation was well attended. The program of the section devoted to apiculture was the best in its history. It is the policy of the section to confine its program to such matters as are of direct interest to those engaged in educational or research work. Prof. H. F. Wilson, of the Wisconsin State University, was elected chairman of the section for the coming year, and Prof. G. M. Bentley was re-elected secretary. The following resolutions were adopted:

"The Section of Apiculture of the American Association of Economic Entomologists hereby axpresses its approval of the informal agreement made by the apiary inspectors of the north Central States and Canada at a recent meeting, December 6, 1920, held in Chicago, Ill., as follows:

"Section 1. Resolved, That the undersigned apiary inspectors of the North Central States and Canada, believe and agree that inspection certificates for the interstate transportation of bees and used apiary supplies should be given only to apiaries which have never been infected, or which have been free from American foulbrood for at least one year.

"Provided, however, that bees in combless packages supplied with food made from pure sugar only, are exempted from the provisions of the section.

"Section 2. It is further agreed that whenever a case of the interstate transportation of bees or used bee supplies, with or without an inspection certificate, comes to the attention of the apiary inspector of any State, full information will be sent to the State inspector of the State of destination.

"It is the further belief and recommendation of the Section of Apiculture that Federal Legislation providing for the regulation of the interstate transportation of bees and used apiary supplies should be enacted."

E. D. Ball,
E. C. Cotton,
S. B. Fracker,
Committee.

### A Co-Operative Association

The newly-organized Wisconsin Honey Producers' Co-operative Association will be guided in its destinies by A. Swahn, of Ellsworth, President, and F. F. Stelling, Reedsville, Vice President, and H. F. Wilson, Madison, Secretary-Treasurer. These temporary officers were chosen at a recent meeting of the new association at Madison, and the Wisconsin movement has received the sanction of the State authorities by incorporating for $1,000. This temporary incorporation capital is to be increased to $25,000 by the end of the season, shares being sold by solicitation of the officers at $10 each.

At the last State convention the movement received the official approval of the beekeepers of Wisconsin and the organization has been completed as rapidly as possible. The purposes of the body are to "aid its members in marketing their honey crop at a reasonable and just price," according to statements issued by the Secretary. It is proposed to develop some plan of advertising and distributing the honey crop. The movement is necessitated, according to Mr. Wilson, because thousands of pounds of honey are being dumped on the market by small dealers at prices which do not justify the time, labor and expense involved in their beekeeping work.

### Speed in Honey Production

A farmer desirous of keeping bees decided to buy a swarm from one of his neighbors. So he bought an empty hive. The swarm was late in coming, but it came at last. As the parents were not at home, the neighbor who brought the bees followed the advice of the daughter of the house and placed the bees in the new hive. There were neither combs nor comb-foundation. The following day the same lady happened to have the visit of a few girl friends. She served tea, butter sandwiches, pastry. Then a happy thought struck her: "We have bees, we will have some honey. Yes, it will be so nice!" Quick as lightning she goes to the looking glass, puts on her hat, and runs to the neighbor with a glass jar. "Oh, please will you not take some honey from our bees for us? I have some visitors." Just think; they were hived yesterday!—Adapted from the "Bulletin de la Societe Romande."

### Honey Sales

Co-operation is in the wind. The beekeepers of the "Federation Vaudoise," Switzerland, are organizing a "sales agency" for honey. No one will be compelled to sell through this agency, those who sell through it paying a premium for the benefit of the association upon the quantity sold through this agency. The margin thus made, after paying expenses, will be expended in advertising, sending out slips and pamphlets, for the purpose of making honey more popular and increasing the demand.

The editor of the "Bulletin" comments upon this by saying that although honey has always sold readily in Switzerland, it would be a mistake to wait till the shipwreck before building salvage boats. That is very well put. The Swiss can give us good example in many things

### Loss of Bees in Maryland

According to available 1920 census figures, there are only 16,117 colonies of bees in Maryland, as against 25,156 colonies in 1910, or a loss of nearly 30 per cent. The honey crop for 1920 was 215,685 pounds, or a per colony production of 13½ pounds.

### Gleanings $1.50

In a recent issue of Western Honeybee the A. I. Root Co. announce that after February 1 the subscription price of Gleanings will be $1.50 per year. In view of the fact that publishing costs have increased out of proportion to costs in other lines, and also of the fact that many publications have increased their subscription rates from two to four times, the increases made by the bee magazines are very moderate. The bee papers held off for two years after most other publications had advanced their rates and then made a much smaller advance than most other publications.

### Beekeeping in School

By the way, did you know that beekeeping is taught in the schools in Louisiana, in both the grades and high school?

The elementary arithmetic has one division in it on "Farm Arithmetic," along with a division on "poultry," "swine," "cattle," etc. and the agriculture for seventh grade has one chapter on beekeeping, along with the above subjects. Jess Dalton.

Bordelonville, La.

### A Czechoslovak Beekeeper

An enthusiastic follower of American methods in beekeeping, in the new Republic of Czechoslovakia has lately passed away, Wenceslaus Svarc. He founded a bee magazine which was published from 1903 till the outbreak of the war. He also founded a beekeepers' school in Tynice, near Prague. He was called in that country "the father of beekeeping." He was also author of a book in Bohemian, on "Progressive Beekeeping."

### New Oregon Association

The beekeepers of Deschutes County, Oregon, met at Redmond on December 7 and organized a county association with the following officers: President, A. J. Sanford, Redmond, Ore.; Vice President, B. D. Becker, Tumalo, Ore.; Secretary, County Agent Jamison, Redmond, Ore.; Treasurer, John Marsh, Tumalo, Ore.

### West Virginia Meeting

The West Virginia Beekeepers' Association meeting will be held, as usual, in the State House of Charleston, on March 25 and 26. All West Virginia beekeepers interested are requested to attend.

Will C. Griffith, Secy.,
Elm Grove, W. Va.

### Honey Not a Luxury

In a recent issue of "Science," M. C. Tanquary, State Entomologist of Texas, has an article taking issue with a previous correspondent who regards honey as a luxury. Tanquary very properly takes the position that such persons usually buy in very small quantity and thus pay more for the container and labor of packing than for the honey itself. He urges that honey be purchased in large quantity, and mentions the 60-pound can as a desirable size for family use.

### Tariff on Honey

From the Department of Commerce we learn that from 1867 to 1894 a duty of twenty cents per gallon was assessed on honey, imported from other countries. From 1895 to 1897 the duty was ten cents per gallon. From 1898 to 1913 the duty was again 20 cents per gallon, and since that date ten cents per gallon. The present rate of ten cents per gallon is less than one cent per pound. Imports from Cuba under the reciprocity treaty are ten per cent less twenty per cent, while importations from Porto Rico, a United States possession, are free of duty. Importations from the other islands of the West Indies, as well as other foreign countries pay the full rate of duty.

Beeswax, on the other hand, comes in free of duty and large quantities have been coming in from Africa and South America for some months past.

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**Italian Bees by the Pound in Packages**

**GOLDEN QUEENS** **3-BAND QUEENS**

We are better prepared than ever before to handle a large demand for both queens and bees by the pound. Let us send you one of our 1921 circulars and late price lists. We are now booking orders almost daily for next spring delivery. Let us book your order now, so as to assure prompt delivery when the bees or queens are wanted. Only a limited number of orders will be accepted for booking, as we are absolutely determined to take only as many orders as we can handle absolutely on time.

**M. C. BERRY & COMPANY, Hayneville, Ala., U. S. A.**

### Death of Lady Beekeeper

Mrs. Beulah Reed, wife of Earl C. Reed, of Ranchester, Wyoming, died on November 3, at the age of 34 years, leaving four children and her husband. Mr. and Mrs. Reed had recently taken up beekeeping as an exclusive business. Mrs. Reed was keenly interested in the bees and will be greatly missed, both in the home and in the apiary.

### Inspector's Report

A copy of the sixth annual report of the Minnesota Inspector of Apiaries recently came to the editor's desk. It contains the usual statistical information regarding the activities of the inspectors for the past year and in addition discusses brood diseases of bees, transferring, etc It contains 18 pages and can probably be secured by addressing Charles D. Blaker, Minneapolis, Minn.

### Illinois

Illinois is asking $10,000 for bee inspection work for 1921. The State Association has also recommended the establishment of a complete department of Beekeeping at the University for education and extension. The budget for the University includes recommendations for a department of beekeeping. Favorable action on the part of the Illinois Legislature will assure a fair start towards better work on beekeeping in the State.

### Exhibit Sells Honey

I am the first beekeeper in this part of the country that got the movable-frame hives.

I had an observation hive with golden Italian bees and queen at our township fair this last fall, and it sure was a treat to everybody. Lots of old men had never seen a queen; it kept me busy pointing out the queen.

I sold all my honey that I had to sell, at 40 cent a pound, and could have sold a thousand pounds more, if I had had it. Geo. W. Jones.

Keota, Okla.

(Compliments for your good management. You can surely sell honey if you only let people know that you have it. Your example should be followed by others.—Editor.)

### Illinois Joins Honey Producers' League

At its recent meeting the Illinois State Beekeepers' Association voted to join the American Honey Producers' League.

### Census Reports

Advance census reports give the 1920 bee population of Ohio as 105,675 colonies, as against 98,242 colonies in 1910.

The honey production for the State in 1920 is given as 835,894 pounds, or less than 8 pounds per colony.

On the other hand, data, carefully collected by Paddock, of Iowa, shows that Woodbury County, Iowa, produced one and one half million pounds of honey in 1920.

All of which leads us to wonder how valuable the census will be, especially in view of the fact that no statistics for bees or honey were collected in cities.

### Iowa Association

Secretary Paddock reports a total of 365 paid-up members for the Iowa Beekeepers' Association, with 162 who are in arrears for dues, making a total of 527 members It would be interesting to know what the total membership of all American beekeepers' organizations would number.

### Good Queens

Professor Paddock, of Iowa, has made very interesting observations on purchases of three-pound packages with queens and three-frame nuclei with queens. His conclusions show that by closer selection of queens the per colony production could be increased and even doubled. Some queens showed such poor production as to have lost their owner $18 each.

We hope to have more on these experiments later.

**We have obtained a large amount of 1 pound glass jars that we can offer at $6.85 per gross, F. O. B., Newark, N. Y.**

**Friction Top Pails all ready for delivery at Newark, New York**

| | | | |
|---|---|---|---|
| 2½ | pound cans, f. o. b. | $ 6.50 | per hundred |
| 3 | pound cans, f. o. b. | 7.00 | per hundred |
| 5 | pound pails, f. o. b. | 10.70 | per hundred |
| 10 | pound pails, f. o. b. | 16.00 | per hundred |

The above prices are f. o. b. Newark, of $1 per hundred less f. o. b. Baltimore, Md.

**Now is a fine time to gather up your old combs and ship them in for rendering. Write for our terms and shipping tags. Highest cash prices paid for beeswax, or we will change your wax for foundation.**

We have in reserve a complete line of bee supplies which we can quote you attractive prices on. We also have some special offers to make on 8-frame hives, bottom-boards and covers.

Send in your list of requirements and let us quote you on same.

**Address THE DEROY TAYLOR CO., Newark (Wayne Co.), N. Y.**

**MR. BEEKEEPER—**

We have a large plant especially equipped to manufacture the supplies that you use. We guarantee all materials and workmanship. We ship anywhere. We allow early order discounts and make prompt shipments. *Write for free illustrated catalog today*

**LEAHY MFG. CO., 90 Sixth Street, Higginsville, Missouri**

**J. W. ROUSE, Mexico, Missouri** **A. M. HUNT, Goldthwaite, Missouri**

### A New York Meeting

The Ulster County, New York, Honey Producers' Co-operative Association held their annual meeting January 8, 1921. The association is affiliated with the State Association and this winter is buying supplies co-operatively. Later they expect to sell their surplus honey through the State Association in the same way. It was voted to have an outing trip (by autos) May 25, 1921, visiting many of the apiaries of Ulster County and making an advertising campaign of the trip as well.

### Mrs. Blaker Dies

We regret to have to announce the death of Mrs. C. D. Blaker, wife of the efficient Minnesota State Bee Inspector, which occurred in Minneapolis on December 30. Our sympathy goes to Mr. Blaker.

### Watson to Texas

Mr. Lloyde R. Watson, Assistant Apiculturist in the Bureau of Entomology at Washington, will shortly take up his duties as assistant to Dr. Tanquary, at College Station, Texas. Mr. Watson will have charge of the State Experimental Apiaries, and will devote his entire time to experimental work in apiculture.

### Queen Best Second Year

"There is no doubt whatever that the queenbee is in her prime for breeding, the second year of her existence, after which her vigor sensibly declines."—American Bee Journal, 1866.

### Italian Bees and Alsike Clover

In an early issue of the American Bee Journal the fact is stated that Samuel Wagner, first editor of this Journal, was the first to call the attention of American beekeepers to Italian bees and alsike clover. Both have proven to be especially adapted to American conditions and have become so widely established in this country as to be taken as a matter of course. Their introduction has been worth untold millions of dollars to agricultural interests in this country.

### Honey as an Energy Producer

A new bulletin recently issued by the Department of Agriculture of the Province of Quebec, gives a table of comparative values of honey and other sugar as producers of energy. Honey, according to this authority, produces 100 calories of heat with one tablespoonful, while granulated sugar requires two tablespoonfuls to produce 100 calories, or twice the amount.

### Honey Changing Quality

American Bee Journal, November, 1920, page 376: "What is the trouble? Who can tell"?. Answer: Percentage of invert sugar in honey varies from 49.59 to 93.96. (Neufeld Der Nahrumgsmittelchemiker als Sachverstandiger, Berlin, 1907, page 275). In this case, too low percentage of sugar allowed activity of some kind of organism which might have been prevented had temperature of honey been raised slowly to 150 degrees and then dropped quickly. A saccharometer might determine the necessity of using heat. Capped honey does not always contain same percentage of sugar.

William O. Dyer.
Rhode Island.

### Bee Hunting

The September number of the Dixie Beekeeper has a two-page article by its editor, on bee hunting in the Blue Ridge Mountains of Northern Georgia. Mr. Wilder is an enthusiastic man and enjoys the sports of hunting game, fishing and bee hunting, and his descriptions make us wish to be with him a few days at such times. He does not think only of making money, and evidently can see the beauties of nature and enjoy the relaxation from work which such sports entail.

### Queenless Swarm Filling Its Hive

The British Bee Journal of October 21 inserts the letter of a beekeeper, A. Lewis, giving the account of a natural swarm which lost its queen, but filled the hive full of comb and honey, without a single one of the cells having been occupied with brood. I remember a similar occurrence which I witnessed in my young days. Having gone to buy bees from a box-hive beekeeper, we examined together all his colonies, about the last of October. We found one, a new swarm, in which there was not over a handful of bees, and no queen. The hive had been filled with honey to the bottom, leaving not over 4 square inches of empty comb. But I cannot remember whether there had been no brood at all. It was a fine box full of virgin honey. The swarm must have been very strong and the season good. I never saw anything like it since.

### British Bee Magazines

We have had several enquiries for the addresses of British bee magazines. The following are the ones we know of:

The British Bee Journal (weekly), 23 Bedford St., Strand, London, W. C., England.

The Bee World appears only quarterly, at present, Benson, Oxon, England.

Bee-Craft (very small), J. C. Whettam, 18 Kingswood Avenue, Chatham, England.

Beekeepers' Record (monthly), same address as British Bee Journal.

The Irish Bee Journal, Lough Rynn, R. S. O., Co. Leitrim, Ireland.

### Iowa Beekeeping Important

F. B. Paddock, State Apiarist of Iowa, estimates that in 1919 there was produced 13,350,000 pounds of honey, worth $2,670,000, and that the total investment in bees and equipment amounts to $4,500,000. He states, further, that Iowa produces 6 per cent of the total output of honey of the nation, and that it is exceeded only by California, which produces 15 per cent, and Texas with 7 per cent of the whole. According to his information, the consumption of honey in Iowa has increased 33 1-3 per cent in the last three years.

### Honey Sold

The Illinois crop of honey for 1920 is largely disposed of. In fact, likely many localities will be under supplied. Another case of lack of proper distribution of our product.

### Lavender Seed

There have been numerous letters from our readers asking where lavender seed can be secured. We find by correspondence that many of the seed houses carry it at 10 cents per packet. Look in your flower-seed catalog.

### Salt

Of two drinking vessels, that containing slightly salted water seemed to be slightly preferred by the bees. —Bienen-Vater, quoted by the Bee World).

### A New Kind of Honey

A lady stopped and enquired for honey. I asked what kind she wanted, and she replied: "She (female) honey. He (male) honey is bitter." I showed her some comb honey. She then said: "That is all right; there is no 'he' honey in that."

New York

### What Puzzled Her

Lady to Beekeeper: "So you keep bees! I think they are just perfectly adorable little creatures; I have just read Maeterlinck's 'The Life of the Bee.' But one thing has always puzzled me: How do you put that little wooden box around the cake of honey without crushing that delicate wax?"—Beekeepers' Item.

## CLASSIFIED DEPARTMENT.

Advertisements in this department will be inserted for 5 cents per word, with no discounts. No classified advertisements accepted for less than 35 cents. Count each initial or number as one word.

Copy for this department must reach us not later than the 20th of the month preceding date of issue. If intended for classified department it should be so stated when advertisement is sent.

### BEES AND QUEENS

Lower Price. Top Quality. Atwater's Honey.

FOR SALE—Utopian quality Italian queens, the kind that satisfy. May 15 to June 10, untested, $2 each. After June 10, untested, $1.50 each, 6, $8. Virgins, 90c each; 6, $4.75.
Utopian Apiaries, Amboy, Minn.

FOR SALE—Twelve colonies Italians in 2 stories packed in quadruple cases according to Government Bulletin; 5 hives, 12 tons and bottoms; all 10-frame Standard Hoffman; 25 supers equipped for comb honey; 1,000 sections, 10 lbs. foundation, feeders, excluders, traps, etc. All new equipment; $400 cash.
Wm. Elges, Heyworth, Ill.

FOR SALE—50 colonies Italian bees in 8-frame new hives, on full sheets foundation and wired, equipment. All in good condition. All goes together for $10 per colony. No disease.
Lee Elliott, Greenview, Ill.

FOR SALE—We have a few hundred fine packages of three-band and golden bees for sale that we have not sold or taken orders for; they are as fine honey gatherers as can be started, a cross of the Davis, Root and Geo. B. Howe strain of bees that get the goods, pile up the honey. First come first served. We do not care for more orders than we can properly care for, and will not accept more than that. Write for prices, delivered spring 1921.
H. B. Murray, Liberty, N. C.

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GOOD STOCK, plus long experience in shipping bees make it profitable to buy package bees or nuclei. Write for my new circular.
R. V. Stearns, Brady, Texas.

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THE ITALIAN QUEENS OF WINDMERE are superior three-banded stock. Untested, $1.50 each, six for $8; tested, $2.50 each; select tested, $3. Bees by the pound; write for prices.
Prof. W. A. Matheny,
Ohio University, Athens, Ohio.

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FOR SALE—Day-old queens, disease resistant Italians. Arrival guaranteed in United States and Canada. High quality, low price, satisfaction. Safe introduction described in circular. Order early. prices: April 15 to September 30, 1, 75c; 12, $7.20; 100, $60.
James McKee, Riverside, Calif.

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FOR SALE—Bees for strengthening purposes, 3-frame nuclei of hybrid or black bees on frames containing brood, at $5.25 f. o. b. Lyons, Ga. No queens included; none for sale. Will be able to start shipping April 20. No disease; safe arrival guaranteed if express agent notes loss on express tag. One-third cash with order. Book your orders at once, as number of nuclei for shipment will be limited.
Otto Diestel, Elza, Ga.

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FOR SALE—Golden Italian queens, untested, $1.50 each, dozen $14. Bees by the pound a specialty. Write for prices on bees.
E. A. Simmons, Greenville, Ala.

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FOR SALE—Queens and bees, Italians and goldens, $1.50 each, $15 per dozen; 1 lb. bees, $5, 2 lbs. bees, $9. If queen is wanted with bees add the price of queen. Safe arrival and satisfaction guaranteed in United States or Canada. Cash or certified check must accompany all orders where parties are not known or satisfactorily rated.
Graydon Bros., Rt. 4, Greenville Ala.

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FOR SALE—Root's strain of golden and leather-colored Italian queens; bees by the pound and nuclei. Untested queens, $1.50 each; select untested, $2 each; tested, $2.50 each; select tested, $3 each. For larger lots write. Circular free.
A. J. Pinard,
440 N. 6th St., San Jose, Calif.

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FOR SALE—Bees in 10-frame Hoffman hives. All foundation drawn comb, about 35 hives. Also extra hives and supers with drawn comb. Bees located near Kingston, N. Y.
J. O. Stewart, 742 Elmore Pl., Brooklyn, N. Y.

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NUCLEI FOR 1921—Now booking orders for 1921 delivery. Italian nuclei (with queen), $6.50 each. Hybrid bees, with pure Italian queen, $5.50 each. Terms, one-third down with order. No disease. Safe arrival and satisfaction guaranteed.
A. R. Irish, Doctortown, Ga.

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I BUY BEES in colonies If you have one or more, write.
Frank Coyle, Penfield, Ill.

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FOR SALE—Will now book orders for our high-grade 3-banded Italian bees on wired Hoffman frames, for May and June delivery, beginning May 20. In 1920 we shipped 50 8-frame nuclei to a party in Montana without a single loss; no foulbrood. Our bees have been inspected by State Bee Inspector, in 1920. One full colony in 8-frame D. D. hive, with select tested queen, $17; one 3-frame nucleus, with select tested queen, $8; one 2-frame nucleus, with select tested queen, $7; one 2-lb. package bees, with untested queen, in June, $6.50; one 1-lb. package bees, with untested queen, in June, $4. Prices on queens given later. Terms, 10 per cent with order; balance first of month in which bees are to be shipped, or 5 per cent discount cash with order. Safe arrival guaranteed.
J. W. Bittenbender, Knoxville, Ia.

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THREE-BAND BREEDERS from one of the heaviest honey-gathering strains in the State. $10 each. Delivery May 15.
A. V. Small, Augusta, Kans.

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FOR SALE—Italian bees with comb and extracting equipment.
Wm. Kruse, Jr., Godfrey, Ill.

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BEES in 2-pound packages, with or without queens. Now booking orders for spring delivery. Safe arrival guaranteed. Always glad to answer questions.
Caney Valley Apiaries,
J. D. Yancey, Mgr., Bay City, Texas.

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1921 PRICES on nuclei and queens: 1-frame nucleus, $3; 2-frame nucleus, $5; 3-frame nucleus, $6.50; without queens, f. o. b. Macon, Miss.; 5 per cent discount on lots of 25 or more. Untested queens $1.25 each, $15 per doz; tested queens $2 each, $22 per doz. No. disease; inspection certificate with each shipment. Safe arrival and satisfaction guaranteed in U. S.. Queens sold only with nuclei.
Geo. A. Hummer & Sons, Prairie Point, Miss

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FOR SALE—Three-banded; Italian queens untested, $1.50 each; 6, $7.50; 12, $14. Select untested, $1.75 each; satisfaction guaranteed.
W. T. Perdue & Sons,
R. No. 1, Fort Deposit, Ala.

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WE are booking orders for our golden Italian queens for spring delivery after April 15. Untested queens, 1, $1.50; doz., $15; select untested queens, 1, $1.75; doz., $18; virgin queens, 1, 75c; doz., $9; tested queens, 1, $3; doz., $36 Safe arrival guaranteed.
Tillery Brothers, Georgiana, Ala.

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FOR SALE—Large, hardy, prolific queens: 3-banded Italians and golden; pure mating and safe arrival guaranteed. We ship only queens that are top notchers in size, prolificness and color. Untested, $2 each; 6, for $11; 25 for $45; tested queens $3 each, 6 for $16.
Buckeye Bee Co., Box 448 Massillon, Ohio.

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WE are now booking orders for early spring delivery of two and three-frame nuclei, with untested or tested queens. Write for prices and terms. We also manufacture cypress hives and frames.
Sarasota Bee Co., Sarasota, Fla.

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FOR SPRING DELIVERY—One good Italian queen, 1 Hoffman standard frame emerging brood, 1 pound live bees, price complete $6.50, f o. b. Bordelonville. Queen introduced, mated, laying enroute; loss in transit replaced if noted on express tag by agent; no disease in State. References given. Orders booked, May delivery, one-fifth cash; orders filled in rotation.
Jess Dalton, Bordelonville, La.

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EDSON APIARIES now booking orders for queen bees for delivery during season of 1921. Prices: One untested queen, $1.25; 50 untested queens, $57.50; 100 untested queens, $100. Orders filled in rotation; first shipments March 1, 1921.
Edson Apiaries, Gridley, Calif.

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PURE ITALIAN QUEENS—Golden or leather colored, packages and nuclei; 1 untested queen, $1.50; 6, $7.50; 12, $13.50; 50, $55; 100, $100; virgins, 50c each; packages, 24 and under, $2.25 per pound; 25 and over, $2 per pound; nuclei, 1-frame, $4; 2-frame, $6; 3-frame, $7.50; queens extra. One-story 10-frame colony with queen, $12.
Golden Star Apiaries,
R. 3, Box 166, Chico, Calif.

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BEES AND QUEENS from my New Jersey apiary
J. H. M. Cook,
1Atf 84 Cortland St., New York City.

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PACKAGE BEES AND PURE ITALIAN QUEENS—Booking orders now for spring delivery. Circular free.
J. E. Wing,
155 Schiele Ave., San Jose, Calif.

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BOOK YOUD ORDERS for QUEENS now—Goldens, $2; tested, $3; banded, $1.50; tested, $2.50; six or more, 10 per cent less.
Clover Leaf Apiaries, Wahoo, Neb.

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"QUALITY" THREE-BANDED ITALIANS from excellent stock; untested queens, 1, $1.50; 6 for $7.50; 12 for $12.50; 50 for $55; 100 for $100.
N. J. James,
1185 Bird Ave., San Jose, Calif.

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HIGH GRADE ITALIAN QUEENS—Send for catalog.
Jay Smith, R. 3, Vincennes, Ind.

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BEES BY THE POUND, ALSO QUEENS—Booking orders now. Free circular gives prices, etc. See larger ad elsewhere.
Nueces County Apiaries, Calallen, Texas,
E. B. Ault, Prop.

## HONEY AND BEESWAX

Lower Price. Top Quality. Atwater's Honey.

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FOR SALE—25 barrels amber extracted honey, 12½c per pound.
H. G. Quirin, Bellevue, Ohio.

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FOR SALE—Finest quality alfalfa-sweet clover extracted honey in 60-lb. cans, 16c. Pure alfalfa, water white, 17c.
J. A. Green, Grand Junction, Colo.

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HONEY FOR SALE in 5 and 60-lb. cans.
Van Wyngarden Bros., Hebron, Ind.

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FOR SALE—Extracted clover-basswood honey; finest quality, put up in 10-lb. pails.
S. E. Angell, Clear Lake, Wis.

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FOR SALE—Choice clover extracted honey, $21.50 per case of two 60-lb. cans. Write for price for large quantities; 50 cases of No. 1. comb honey.
J. D. Beals, Oto, Iowa.

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FOR SALE—Guaranteed pure extracted honey, new crop clover and basswood, 60-lb. cans $15, 10-lb. pails $2.80. Sample 15c.
Ed. B. Klimaschesky, Mahnomen, Minn.

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FOR SALE—Finest white clover honey. 10-lb., pails, 6 to case, 25c lb.
W. L. Ritter, Genoa, Ill.

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FOR SALE—1,600 lbs. of extracted honey, a blend of white alsike and sweet clover and heartsease. This honey was left on the hive until the last of November. One case of two 5-gallon cans, $27.20; if more is wanted, write for prices.
A. L. Kildow, Putnam, Ill.

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FOR SALE—Finest Michigan raspberry, basswood and clover honey in 60-lb. cans, 20c per pound. Heartsease and aster, 18c. Free sample.
W. A. Latshaw Co., Carlisle, Ind.

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HONEY FOR SALE—Immediate N. Y. shipments, clover or sage qualities. White grade at 18c lb., or light amber grades at 16c per lb. Two 60-lb. cans in case. Light amber West Indian grade (50 gal. barrels) 90c per gallon. All f. o. b. New York City.
Hoffman & Hauck, Inc., Woodhaven, N. Y.

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FOR SALE—3,200 lbs. of fancy basswood-clover extracted honey in new 60-lb. cans; also 1,215 lbs. of buckwheat.
A. Blanchard, Naples, N. Y.

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FOR SALE—Fine grade of clover honey in 60-lb cans, 18c a pound f. o. o. Des Moines, Ia. Light amber 16c f. o. b
Bert A. Brown, Des Moines, Ia.

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FOR SALE—9,000 lbs. of fine clover and basswood extracted honey, put up in new 60-lb. cans, 15c f. o. b. Orangeville.
C. E. Keister, Orangeville, Ill

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WANTED—White clover honey, comb and extracted, one case up.
Frank Coyle, Penfield, Ill.

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FOR SALE—Extracted honey in 60-lb. cans, 2 cans in a box, white clover and basswood blend, per can $11.40. Light amber, fine, $10.80; amber $10.20. Sample 10c.
J. W. Bittenbender, Knoxville, Ia.

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FOR SALE—Choice New York State clover honey in 60-lb. cans, two cans per case, at 14c per lb. f. o. b. Delanson.
F. C. Alexander, Delanson, N. Y.

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FOR SALE—Amber honey, 2 60-lb cans per case, 15c per pound; less in 10-case lots.
Arthur Knerston, Shreveport, La., Gen. Del.

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NEW HONEY. NEW PRICES—Supply your customers, finest alfalfa-clover honey, extra strong cases, $11.50 for one 60-lb. can, $21.60 case of 2, all f. o. b. here. Write for prices large lots. Two carloads sold; plenty on hand.
E. F. Atwater, Box 37J, Meridian, Idaho.

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FOR SALE—Finest white clover and basswood extracted honey in 60-pound cans.
Noah Bordner, Holgate, Ohio.

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SOUTHERN AMBER HONEY—Two 60-lb cans to the case, 15c per pound.
Walter Reppert, Shreveport, La., Gen. Del.

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FOR SALE—Very fine quality basswood-milkweed (mostly milkweed) honey in 60-pound cans.
P. W. Sowinski, Bellaire, Mich.

FOR SALE—Finest quality extracted honey in 60 lb. square cans 2 cans per case State how much you can use and I will quote you on same.
Angus M. Paterson,
212 E. 6th St., Flint, Mich.

FOR SALE—Clover and buckwheat honey, either comb or extracted, at reduced prices; any style container. A postcard will bring our quotations.
The Deroy Taylor Co.,
Wayne Co., Newark, N. Y.

WANTED—Comb and extracted honey.
The L. H. Snider Apiaries, Auburn, Ind.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 6c a pound for wax rendering.
Fred W. Muth Co.,
204 Walnut St., Cincinnati, Ohio.

## SUPPLIES

Lower Price. Top Quality. Atwater's Honey.

FOR SALE—New Standard Hoffman frames, K. D. crates of 100; new Standard Root ten-frame reversible bottom-boards, K. D., crates of 25; also used ten-frame Standard Root hive-bodies, painted, no disease. Money-saving prices.
Warner Apiaries, Asheville, N. C.

FOR SALE—White sweet clover seed in hull, $1.25 peck, $4.25 bushel.
Stover Apiaries, Mayhew, Miss.

FOR SALE—100 cases new 60-lb. cans in second-hand cases, packed two to the case. Cases are sound, but have been used once, 60c per case.
Dadant & Sons, Hamilton, Ill.

FOR SALE—We have recently transferred 50 colonies of bees from old-style American hives with 12x12 frames. The discarded hives are in good shape, well painted, and would be desirable to anyone having this size hives. We offer the empty hives at $1.60 each, if all are taken in one lot. Write for further particulars.
Dadant & Sons, Hamilton, Ill.

FOR SALE—3,000 comb-honey supers for 4x5 section, nailed and painted; run in clean yards; are practically as good as new. Also, 4,000 Airline shipping cases; also nailed, corrugated paper for same; also 40,000 grooved sections with full sheets of foundation for same. This is all A1 stuff and prices away down.
L. A. Coblentz, Rigby, Idaho.

ROOT'S GOODS at Root's prices.
A. W. Yates, Hartford, Conn.

FOR SALE To reduce stock, crates of 96 1 gallon cans, with bails and 3-inch screw caps, at $17.60 per crate, f. o. b. Grand Rapids.
A. G. Woodman Co., Grand Rapids, Mich.

FOR SALE—One-pound jars in two doz. cases, ten cases or more at $1.76 per case, f. o. b. factory.
A. G. Woodman Co., Grand Rapids, Mich

FOR SALE—Good second-hand double-deck comb honey shipping cases for 4¼x4¼x1⅞ sections, 25 cents per case, f. o. b. Cincinnati; terms cash with order.
C. H. W. Weber & Co.,
2146 Central Ave., Cincinnati, O.

FOR SALE—Good second-hand empty 60-lb. honey cans, two cans to the case, at 60c per case, f. o. b. Cincinnati. Terms cash with order.
C. H. W. Weber & Co.,
2146 Central Ave., Cincinnati, O.

SEND us a list of goods wanted and will quote you lowest prices. We are the money-saving house. Price list free. Try us.
H. S. Duby & Son, St. Anne, Ill.

## WANTED

Lower Price. Top Quality. Atwater's Honey.

WANTED—Old bee magazines. We have several customers who wish to complete their files of American ee Journal and other magazines relating to beekeeping. The early volumes are especially desired. State what you have and price wanted in first letter.
American Bee Journal, Hamilton, Ill.

WANTED—Second-hand 10-frame empty hives. Will pay cash.
Dr. R. B. Smith, Villisca, Iowa.

WANTED—Second-hand hives, standard 10-frames.
Geo. Harris, Dundas, Minn.

WANTED—Second-hand 10-frame comb-honey supers, complete, 4x5 plain sections preferred. Must be good and clean and within 400 miles of Sioux City.
M. G. Beals, Oto, Iowa.

WANTED—Bees in straight-combed Standard L-framed hives.
Amos Burhans, Waterloo, Iowa.

WANTED—200 or less colonies of bees for spring delivery. Any style hive or box. Remembering 10c honey is in sight for 1921.
A. W. Smith, Birmingham, Mich.

FOR SALE—Fifty 10-frame beehives with metal covers.
Thos. Cordner, R. 7, Sparta, Wis.

WANTED—Extractor. Will pay cash. Langstroth frames 6c.
Lorenzo Clark, Winona, Minn.

WANTED—10 or 12 inch foundation mill. State condition and price.
Elbert Armentrout, Irving, Ill.

WANTED—A good honey location and bee outfit.
Delbert Lhommedieu, Colo, Iowa.

WANTED—Bees, with or without location.
F. W Pease,
1717 Blake Boulevard, Cedar Rapids, Ia.

WANTED—Beeswax, old combs and cappings for rendering on shares. Also wax accepted for trade. Top market prices offered.
A. I. Root Co., Council Bluffs, Iowa.

WANTED—Beeswax. At present we pay 36c per pound in cash and 38c in trade for clean, yellow wax, delivered Denver.
The Colorado Honey Producers' Association,
Denver, Colo.

WANTED—Your order for "Superior" Foundation. Prompt shipments at right prices.
Superior Honey Co., Ogden, Utah.

## SITUATIONS

Lower Price. Top Quality. Atwater's Honey.

WANTED—Position by single man experienced in bee-culture. Prefer queen-rearing and pound package business.
S., care The American Bee Journal.

WANTED—Two young men, able-bodied, willing to work, clean in body and mind, who want to learn beekeeping and are willing to exchange faithful services for instruction from a man with almost forty years of extensive experience in beekeeping, board and some financial remuneration. Have twelve apiaries.
R. F. Holtermann, Brantford, Ont., Canada.

WANTED—Alsacian lady who can furnish good references and speaks English, French and German, wishes to spend a season working at beekeeping. K., care American Bee Journal.

WANTED—Man with some experience to work with bees coming season. State age, experience and wages wanted, based on our furnishing board.
The Rocky Mountain Bee. Co.,
Box 1319, Billings, Mont.

WANTED—One experienced man, and students or helpers, in our large bee business; good chance to learn. Modern equipment and outfit, including auto truck; located near summer resorts. Write, giving age, height, weight, experienc, reference and wages wanted.
W. A. Latshaw Co., Clarion, Mich.

WANTED—A live young man to help me during season of 1921.
Allen Latham, Norwichtown, Conn.

WANTED—A queen breeder for the coming season, to rear commercial queens. Address,
M. S. Nordan, Mathews, Ala.

WANTED—One or two good queen-rearing men to begin work February 15, 1921.
Nueces County Apiaries, Calallen, Texas.

WANTED—Two comb-honey men for season of 1921. Give experience, age, and wages expected.
B. F. Smith, Jr., Fromberg, Mont.

WANTED—Will give experience and fair wage to active young man not afraid of work, for help in large, well-equipped set of apiaries for season starting April. State present occupation, weight, height, age and beekeeping experience, if any.
Morley Pettit, The Pettit Apiaries,
Georgetown, Ont.

## FOR SALE

Lower Price. Top Quality. Atwater's Honey.

FOR SALE—Southern amber honey, f. o. b., 30 and 33 gallon barrels, 12½c per lb.
G. F. Tucker, Blounstown, Fla.

FOR SALE—Fifty colonies of bees in old style Dadant double-walled hives in excellent condition; located in eastern Iowa. If interested, write. E. J. B., care American Bee Journal, Hamilton, Ill.

FOR SALE—Biennial white and yellow sweet clover seed, $6.50 per bushel in bushel lots and over. Send for samples.
N. H. Barnett, Howard, Kans.,
Rt. 1, Box 74.

FOR SALE—5 acres of fine land in good location. A honey house with cement floor, and 300 colonies of bees. Best location for bees in southwest Texas. Will sell by the first of March.
Chas. Heim & Sons, Three Rivers, Tex.

FOR SALE—150 colonies in ten-frame hives, with 2 shallow extracting supers, in good shape, $15 per colony.
A. A. Lyons, Ft. Collins, Colo.

FOR SALE—14 apiaries, one or all. Fine climate, health and stone roads, American church and school. Last season's crop 44 tons.
M. C. Engle, Herradura, Cuba.

HOME—9 acres fruit trees, raspberries, blackberries and pasture. Bees and poultry included. Excellent location and home markets. Good buildings.
Eber Coate, Georgetown, Ill,

FOR SALE—100 cases second-hand cans, packed two to the case, at 60c per case.
Dadant & Sons, Hamilton, Ill.

FOR SALE—30 Standard bodies, $17; 4 Jumbo bodies, $3; 10 Woodman double-wall Jumbo hives, $35, new; 100 1½ spaced Jumbo frames, K. D , $5; 200 Hoffman frames, K. D., $9; 2 shallow extracting bodies, $1; 10 4¼x4¼ plain comb supers, complete, $8, new; 1 Cowan reversible extractor, $18; 20 queen excluders, $6; 5 telescope covers, $5; 14 bottoms, $8; 1 Woodman section press and lamp, $3; 25-lbs. Dadant medium brood foundation for Hoffman frames, $18; 15 lbs. Dadant medium brood foundation for Jumbo frames, $10; 6 lbs. Dadant surplus foundation, $4. All in good condition.
D. H. Maunsell, Midland, Mich.

FOR SALE—Eighty 8-frame hives with tops and bottoms, Root and Wilder make, part of them painted; used but one season (no disease in yards). Price $2 per hive, or $150 for the lot.
A. R. Irish, Doctortown, Ga.

FOR SALE—"Superior" Foundation (Weed process). Quality and service unexcelled.
Superior Honey Co., Ogden, Utah.

FOR SALE—Cedar or pine dovetailed hives; also full line of supplies, including Dadant's foundation. Write for catalog.
A. E. Burdick, Sunnyside, Wash.

## MISCELLANEOUS

Lower Price. Top Quality. Atwater's Honey.

THE DOMESTIC BEEKEEPER, becoming known as "the livest bee journal published," reaches every interest, contains good articles, timely information, all the news worth printing. Monthly, $1.50 per year. Sample copy free.
The Domestic Beekeeper, Lansing, Mich.

GRANULATED HONEY SLIPS—100, 20c.
Dr. Bonney, Buck Grove, Iowa.

DR. MILLER'S BEE SONGS are in "Songs of Beedom.' Ten songs for 20 cents, postpaid; 2-cent stamps taken. Also Teddy Bear souvenir postal cards, 10 for 10 cents. Address Geo. W. York, Box 84, Spokane, Wash.

# HONEY BROOK FARM

**TWO AND THREE POUND PACKAGES ITALIAN BEES**
**ALSO THREE-BANDED ITALIAN QUEENS**

**Delivered to you by parcel post.**

My bees are untiring workers—gentle, prolific, properly priced. Pure mating absolutely guaranteed.

Ready for shipping April 10. To be in line, let me book your order now. Only 10 per cent cash required with order, balance just before you desire shipment.

No package bees sent without a queen.

Prices: Two-pound package, including untested queen ----$6.50
Three-pound package, including untested queen --- 9.00
Twelve or more packages, 25c per package less.
Queens: Untested, $1.50 each or $15 per dozen. Tested, $2 each, straight..

I will pay all the postage on package bees and queens. Empty cages to remain my property, and to be returned at my expense.

**JASPER KNIGHT, Prop., Hayneville, Ala.**

**Prompt Service, Safe Arrival and Satisfaction Guaranteed**

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# FOR SALE

**IF YOU WANT THE CHEAPEST, BUY THE BEST**

I am prepared to furnish for the season of 1921 twenty-five hundred two and three frame nuclei of my bright 3-banded Italian bees, headed with young, vigorous queens. These bees are free from disease, and safe arrival guaranteed. Hoffman frames wired and on full sheets of foundation; very few combs over two years old. I am booking orders now. One-fourth or one-half cash with order, balance before shipping.

Two-frame, $4.25; three-frame, $5.25. If queens are wanted, add $1.25 each.

After May 5th I will be ready to mail queens at the following prices: Untested, single $1.50, six for $8, twelve for $15. Tested, $2.50 each. Select tested, $3.50 each. Write for prices for large lots.

**A. B. MARCHANT, Jesup, Ga.**

**Reference: Merchants and Farmers Bank of Jesup.**

---

# HONEY CANS

Let us figure with you on your requirements of Honey Cans. We ship any quantity desired.

**WRITE FOR PRICE LIST**

**VIRGINIA CAN COMPANY, Roanoke, Va.**
**BOX 577-D**

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**SHE-SUITS-ME queen-bees, prices for 1921: Untested Italians, $2 each; $1.75 each for 10 or more, prior to June 15. After June 15, 1 to 9 queens $1.50 each, 10 to 24 $1.40 each, 25 and up $1.25 each.**

ALLEN LATHAM,
Norwichtown, Conn.

---

# BEST GOLDEN ITALIANS

**BEN G. DAVIS, SPRING, HILL TENN.**

---

# PAINT WITHOUT OIL

**Remarkable Discovery that Cuts Down the Cost of Paint 75%**

**A Free Trial Package is Mailed to Everyone Who Writes**

A. L. Rice, a prominent manufacturer of Adams, N. Y., discovered a process of making a new kind of paint without the use of oil. He named it Powdrpaint. It comes in the form of a dry powder, and all that is required is cold water to make a paint weather proof, fire proof, sanitary and durable for outside or inside painting. It is the cement principle applied to paint. It adheres to any surface, wood, stone or brick, spreads and looks like oil paint and costs about one-fourth as much.

Write to A. L. Rice, Inc., Manufacturers, 23 North St., Adams, N. Y., and a free trial package will be mailed to you, also color card and full information, showing you how you can save a good many dollars. Write today.

---

# Florida Queens and Bees

Two-frame nuclei with queen, $6 each. Tested queens, $2 each. Selected tested, $3 each.

This golden and three-band Italian stock I am offering has predominated and reproduced itself in the Sand Ridge section of Central Florida for 30 years.

**DIXIE BEEKEEPER**

A 32-page monthly publication now two years old, devoted to beekeeping and its possibilities, as well as the general interest of beekeepers here in Dixie, $1 per year. Sample free.

**WILDER'S CYPRESS HIVES** are durable and satisfactory. A full line of beekeeper's supplies at low prices.

Write for catalog.

**J. J. WILDER, Waycross, Ga.**

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PAT JULY 30, 1918

# C.O.BRUNO NAILING DEVICE

*Made for the Huffman Brood Frames.* A combined Nailing, Wiring and Wedge Clamping Device. Has been tried and is guaranteed to do accurate work.

PRICE $7.50

Complete directions for operating are furnished with each device.

**Manufactured by C. O. BRUNO**
**1413 South West Street, Rockford, Illinois**

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# Illinois Beekeepers

Become a member of the State Association. If you pay the dues of $1.75 you become a member, get a years' subscription to your choice of bee journal and cloth-bound copy of the annual report issued every fall.

G. M. WITHROW, Secy.
Mechanicsburg, Ill.

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A NEW BEE BOOK
"Dadant's System of Beekeeping"
Price $1.00.

# BEE SUPPLIES

We are prepared to give you value for your money. Our factory is well equipped with the best machinery to manufacture the very A-best supplies that money can buy. Only the choicest material suitable for bee hives is used. Our workmanship is the very best. Get our prices and save money.

**Eggers Bee Supply Mfg. Co.**
Incorporated
ROUTE 1, EAU CLAIRE, WIS.

DOWN IN COST

# TINS AND GLASS JARS

**ORDER NOW FOR NEXT CROP PACKING**
**NOTE: LOW PRICES SUBJECT TO CHANGE AT ANY DATE**

Following tins f. o. b. Baltimore factory. For New York shipment add 15 per cent extra:

2½-lb. cans, 2 doz. reshipping cases, $1.45 per case net.
" in 100-can crates, $6.50 per crate net.
" in 200-can crates, $11.00 per crate net.
" in 500-can crates, $24.50 per crate net

5-lb Pails with Handles—1 doz. reshipping cases, $1.35 per case net.
In crates of 100, $8.30 per crate net.
In crates of 200, $16.25 per crate net.

10-lb. Pails with Handles—In ½-doz. cases, $1.10 per case net.
In crates of 50, $6.70 per crate net.
In crates of 100, $12.75 per crate net.

5-gal tins, used, good condition, 2 to case, 50c per case
5-gal. tins, new, 2 tins to wood case, $1.35 per case.

**White Flint Glass, with gold lacqd. wax-lined caps**

F. O. B. Wheeling, W. Va., factory, or add 15 per cent for New York delivery:
8-oz. honey capacity, cylinder style, $1.50 carton of 3 doz.
15-oz. honey capacity, table jar style, $1.40 carton of 2 doz.
Quart or 3-lb. honey capacity, Mason style, $1.00 carton of 1 doz.

**HOFFMAN & HAUCK, Inc., Woodhaven, N. Y.**

## HONEY PRODUCERS TAKE NOTICE

Do you realize that it is only a short time until your bees will be taken out of winter quarters? Have you thought about supplies for next season? Do not wait until swarming time for that means dollars out of your pocket. Order your supplies NOW.

We manufacture and carry in stock a complete line of bee supplies ready for prompt shipment. Send us a list of supplies you will need and we will be pleased to quote you our price. Our 1921 descriptive catalog and price list is now ready for mailing; send us your name and address and we will mail you our catalog.

**AUGUST LOTZ COMPANY, Boyd, Wisconsin**

# PORTER BEE ESCAPE

SAVES
HONEY
TIME
MONEY

PORTER
BEE ESCAPE
PATENTED

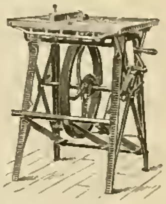
**For sale by all dealers.**
**If no dealer, write factory**
**R. & E. C. PORTER, MFRS.**
**Lewistown, Illinois, U. S. A.**
(Please mention Am. Bee Journal when writing)

# HONEY

If interested in either **extracted or comb** write for our prices before buying. **They are right.**

**C. C. CLEMONS CO.**
DEPT. A
KANSAS CITY, MO.

## BARNES' FOOTPOWER MACHINERY



Read what J. E. Parent, of Chariton, N. Y says: "We cut with one of your Combined Machines last winter 50 chaff hives with 7-in. cap, 100 honey-racks, 500 frames and a great deal of other work."

**W. F. & JOHN BARNES**
995 Ruby St., ROCKFORD, ILLINOIS

## ELECTRIC IMBEDDER

**Price without Batteries $1.50**
Not postpaid.

Actually cements wires in the foundation. Will work with dry cells or with city current in connection with transformer. Best device of its kind on the market.

For sale by all bee supply dealers

**Dadant & Sons,** Manufacturers HAMILTON, ILL.

## BEE SUPPLIES

We carry a complete stock of supplies at all times, and can make prompt shipments. Our prices will interest you.

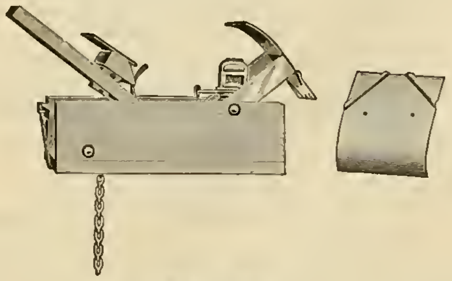
Send Us Your Inquiries

**A. H. RUSCH & SON CO.**
Reedsville, Wis.

*Early Orders Bring Savings*

NATURALLY we want your order for bee supplies **now**, when we can give it better attention. Spring will soon be here, with its usual rush for supplies. So we offer an early-order discount to beekeepers who buy **now**.

**Write today for our red catalog.**



We are exclusive manufacturers of the

**Dewey Foundation Fastener**

Many exacting beemen claim it is the best machine yet devised Overcomes objections common to all others Include the Dewey in your order

**W. T. FALCONER MFG. CO., Falconer (near Jamestown) N. Y., U. S. A.**
*" Where the Best Bee Hives Come From "*

**BEE SUPPLIES**

**ROOT'S GOODS AT FACTORY PRICES WITH WEBER'S SERVICE**

We carry several carloads of bee supplies, and are able to give prompt shipment at all times. Our motto is a customer must be satisfied. Give us a trial and we will show you how quickly we will answer your correspondence. Send your order and it will follow 24 hours after we receive it. Our new catalog will be ready about January 15; send for same. We have thousands of satisfied customers, why not you? Send a list of your wants and we will quote you.

**C. H. W. WEBER & CO., 2163-65-67 Central Ave., Cincinnati, O.**

**BOYER'S "QUALITY-FIRST"**

**TIN HONEY and SYRUP CONTAINERS**

are the best and cheapest in the long run
Prompt shipments of all standard sizes and styles

**CAN MANUFACTURERS SINCE 1892**
**LARGE CAPACITY**

If you cannot secure them from your usual supply house, write us your needs

**BALTIMORE, MD. W. W. BOYER CO., Inc. 2327-2359 Boston St.**

**BEEKEEPERS** WE MANUFACTURE DOVETAILED HIVES, HOFFMAN FRAMES, SECTIONS AND SHIPPING CASES

Our hives are made of best grade White Pine, cut accurate and smooth to standard measure. Sections are made of Basswood polished on both sides. There are no better made.

We carry a complete line of everything used in the apiary. Our shipping facilities are as good as can be found anywhere. We want your business. We guarantee prompt and satisfactory service. Price list free.

**MARSHFIELD MANUFACTURING COMPANY, Marshfield, Wis.**

Good stock, plus long experience in shipping bees make it profitable to buy package bees or nuclei.

*Write for my new circular*

**R. V. STEARNS**
**BRADY, TEXAS**

**STRAWBERRY PLANTS**

Good, strong, well rooted plants as low as $4 and $5 per thousand. Also a complete line of the best red and black raspberries, hardy blackberries, fancy gooseberries and currants; a large stock of popular grape vines. Many of our customers are making from $500 to $1,200 per acre growing berries from our fruit plants. Send for our free catalog.

**BRIDGMAN NURSERY CO.,**
**Box 13, Bridgman, Mich.**

# Crop and Market Report

Compiled by M. G. Dadant

Indications were when the last report was written, that by the time February arrived there would be a change in the market conditions, so that honey would be moving more freely. Unfortunately, this has not been the case, and many beekeepers are still with considerable stocks of honey on their hands. This applies, of course, to the larger producers who were not able to sell their honey through local channels. Practically all of the smaller beekeepers have disposed of their entire stocks, and, of course, many of the large beekeepers have also. The condition is better than it was a month ago, although it has not moved with any great speed.

With reference to honey prices, these are lower than they were a month ago, with no indication of any rise in price, since sugar also has maintained a very low level. The only redeeming factor is that foreign exchange has risen considerably and there should be a larger market for honey in the foreign field before long.

We have seen an offer of Chilian honey put up in five-pound cans at 16c per pound, or 80 cents for five-pound cans. This is indeed very low. The quotations of one California commission merchant are as follows: fancy white sage honey, 15c; fancy white orange honey, 16c; choice light amber sage honey, 13c; fancy white sweet clover honey, 11c.

They also quote some special trade in a few cars of honey which they fish to move promptly and which are as follows: Fancy light amber alfalfa honey 8c, Hawaiian honeydew 5c. All of these are f. o. b. common shipping points California.

The reader will note from these that the honey price has dropped very materially, and my private opinion would be that right now is hardly the best time to sell, since the above prices very likely reflect the quotations as made by beekeepers who are forced to move thir honey and are willing to sacrifice the same at a considerable reduction. The large co-operative associations are not in line with the offers quoted above and are holding considerably higher.

Comb honey has moved very well and there will be little of this left after the first of March.

Naturally, we are going through very peculiar times at present and it is difficult to say what the honey market will do. It hardly seems plausible, however, that prices should remain at the present low ebb unless all other produce does.

There has been decided improvement in the prices of grain and some other farm products and evidently honey will follow in turn.

No doubt that a great deal of the unfavorableness in the honey situation is due to the low price of sugar and the fact that many manufacturers are returning to sugar in their products instead of using honey as was done during war times. However, probably the main reason for the surplus of honey is the fact that our exports are so very low.

We understand that there is under consideration an increased duty on honey which would tend to raise the price of foreign honey entering these markets. However, the United States is ordinarily a honey exporting country rather than a honey importing, and these will only have a temporary influence.

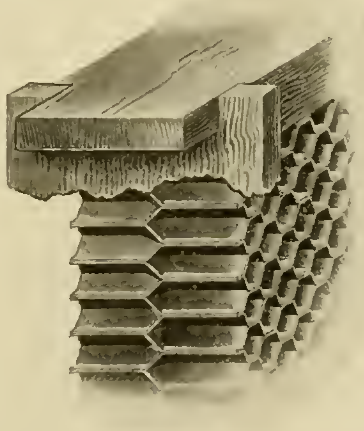
AT LAST MR. BEEKEEPER

MAC DONALD ALUMINUM HONEYCOMBS YOU MAY ORDER FROM 1 to 10,000

AND KNOW THAT YOU WILL RECEIVE THEM ON TIME

The New Brood Rearing Aluminum Comb

55c f. o. b. Pasadena



Hoffman, 60c f. o. b. Pasadena

Langstroth, 60c f. o. b. Pasadena

Jumbo, 70c f. o. b. Pasadena

Shallow, 50c f. o. b. Pasadena

Prompt and Safe Delivery Guaranteed

DUFFY-DIEHL, Inc., 17-19 South Chester Street, Pasadena, Cal.

# AIRCO MILLS TURNING

And we are making that famous product, the New Process Root-Weed Foundation on our own machines, here at Council Bluffs. Let us send you a sample, for we believe it is absolutely the last word in foundation. And you'll want to give it a trial in your own apiaries. We are willing to abide entirely, the results of severest test.

We must have, of course, large amounts of beeswax to keep up with the demand for Airco. We will be glad to quote on all you hold, and we believe that our schedule of price, credit, or of working wax into foundation will interest you. And our quotation on your total foundation needs for 1921 will interest you also.

*Use Airco--It Pays*

**THE A. I. ROOT CO.**
**OF IOWA**
**COUNCIL BLUFFS, IA.**

# FOREHAND'S THREE BANDS

**THE THRIFTY KIND**

The year of 1921 brings us to the 29th year of our experience in rearing queens for the market. It will bring our queens up to a higher standard, one that is still **surpassed by none, but superior to many.**

**WRITE FOR CIRCULAR**

**W. J. FOREHAND & SONS**
**FT. DEPOSIT, ALA.**

# TENNESSEE-BRED QUEENS

**Forty-nine Years' Eperience in Queen-Rearing**
**Breed Three-Band Italians Only**

| | Nov. 1st to July 1st | | | July 1st to Nov. 1st | | |
|---|---|---|---|---|---|---|
| | 1 | 6 | 12 | 1 | 6 | 12 |
| Untested Queens | $2.50 | $12.00 | $22.00 | $2.00 | $10.00 | $18.00 |
| Select Untested | 2.75 | 13.50 | 24.00 | 2.25 | 12.00 | 20.00 |
| Tested | 3.50 | 20.00 | 35.00 | 3.00 | 16.00 | 30.00 |
| Select Tested | 4 00 | 22.50 | 40.00 | 3.50 | 18.50 | 35.00 |

Select tested, for breeding $7.50

The very best queen tested for breeding $15

Capacity of yard 6000. I sell no bees by the pound or nuclei except with high priced tested and breeding queens

Queens for export will be carefully packed in long distance cages, but safe delivery is not guaranteed

**JOHN M. DAVIS, Spring Hill, Tenn.**

# THAGARD'S ITALIAN QUEENS

**BREE FOR QUALITY**

After years of breeding from some of the best three-banded stock imported from Italy, we have brightened the color and retained the good qualities of their mothers. I do not breed for quantity, but breed for quality. My queens have proven this to thousands of beekeepers who have tried them. They are hardy, prolific, gentle, disease-resisting and honey producers. Book your order early for spring delivery.

Untested, 1, $2; 6, $8; 12, $15.
Select untested, 1, $2.25; 0, $10; 12, $18.
Tested. 1, $3; 6, $16; 12, $28.
Select tested, 1, $5; 6, $25; 12, $50.

We have ready to ship, one carload of bees in 8 and 10-frame Root hives, Hoffman frames, wired with comb drawn from full sheets of foundation. Write for prices in lots from 10 to 100.

Safe arrival, pure mating, and perfect satisfaction guaranteed. Circular free.

**V. R. THAGARD, Greenville, Ala.**

CYPRESS DEFIES DECAY

# CYPRESS by TEST
# Substitutes by TALK

CYPRESS LASTS PRACTICALLY FOREVER

## The PROOF?—Two Letters FROM BEEMEN:

"Our correspondent makes serious complaints against ——— and MAKES A PLEA FOR CYPRESS as a BEEHIVE MATERIAL. We hope you will look into this matter," (Etc.)—and here's another:

"Mr. ———, of ———, just came into the office. He informs us that they tried a car of CYPRESS LUMBER last year for the first time, and are so well pleased with it that they are ORDERING ANOTHER CAR for use in making HIVE BOTTOMS."

Is there value to you in an endurance test of 51 years in greenhouse sash? It is reported to us that sach made of heart Cypress by a prominent greenhouse contractor in Chicago, and placed in position in a greenhouse at Des Plaines, Ill., in 1868, are **Still Doing Service.**

**It will serve you as well** and save you the nuisance and expense of repairs and replacements.
The argument backed by such facts cannot be answered by mere talk. Ask the manufacturer or contractor who wants to give you a "substitute" for Cypress to cite you an endurance test of 30 to 45 years to the credit of the so-called "substitute."

That is no more than a fair precaution on your part—good, ordinary business sense.

**Write us for Vol. 1 of the Famous Cypress Pocket Library with Full U. S. Government Report on "The Wood Eternal"**

**SOUTHERN CYPRESS MFRS.' ASSOCIATION**
**1251 PERDIDO BUILDING, JACKSONVILLE, FLA.** **1251 HIBERNIA BANK BUILDING, NEW ORLEANS, LA.**
FOR QUICK SERVICE, ADDRESS NEAREST OFFICE

# ALUMINUM HONEY COMBS

PRICE LIST

| | |
|---|---|
| Standard Langstroth (Hoffman brood-frame) size, each | 60c |
| Shallow Extracting (5⅜ in. deep) size, each | 50c |
| Modified Dadant (Jumbo depth) size, each | 70c |

Prices are f. o. b. San Antonio, Texas.

| | |
|---|---|
| Parcel Post weight, 1 comb | 2 lbs. |
| Parcel Post weight, 10 combs | 11 lbs. |
| Parcel Post weight, 20 combs | 20 lbs. |

We receive hundreds of letters about this valuable beekeeping appliance, of which this is a fair sample:

Texas Honey Producers' Association,
1105 S. Flores Street, San Antonio, Texas.

Hiram, Ohio, January 3, 1921.

Dear Sirs: I purchased a set of the Aluminum Honeycombs—of the Company in California—last year, in time for a test this last season, and am so well pleased that I am anxious for more. I divided the set between two strong colonies, one set in brood-chamber and balance in extracting supers. In the brood-chamber every comb was filled with brood—both sides, as nice a set of 5 brood-combs as I ever saw. The 5 in extracting super were filled twice with clover and extracted and once on fall honey. The frames averaged 8 lbs. net. The colonies that made the extracted honey gave me 440 lbs. of surplus honey, the largest yield I ever secured from a single colony, and I lay it to the Aluminum Honeycombs, and I am glad to know I can get more. Please send me price list and circulars.

Respectfully,
H. M. LEACH.

*Write for our new catalog containing full description and prices on*

**LEWIS BEEWARE, DADANT FOUNDATION, ALUMINUM HONEY COMBS**

**TEXAS HONEY PRODUCERS ASSOCIATION**
**1105 S. Flores St.** **P. O. Box 1048** **San Antonio, Texas**
**E. G. LE STOURGEON, Mgr.**

# BEE SUPPLY PRICES

We are here going to make an absolutely frank statement about bee-supply prices, for we know that many beekeepers feel that the present prices are not warranted. They are under the impression that prices of the material we use in manufacturing bee supplies have fallen greatly, and that a drop in bee-supply prices is due. We wish this were true; but, unfortunately, it isn't true.

For more than a year, during all the time when prices of materials used in our manufacturing were mounting higher and higher, we refrained from advancing our prices. We hung to the old prices, hoping every day that the turn downward in material prices would come. But this turn didn't come. The result was that we found ourselves manufacturing much the largest part of our bee supplies at an actual loss. We couldn't continue this, and on July 1, last, we made the advance to present prices. Some commodities in general public use had begun to fall by that time. So it seemed to many that our price advance came when the turn downward in all prices was at hand. But the fact is that the prices of material we had to have in our manufacturing of bee supplies did not turn downward. These prices were still holding level, or going up. Clothing prices could go down because wool and cotton took a tremendous drop. We don't use wool and cotton in our manufacture. We do use high grade lumber and metals—and these didn't go down.

Only today, January 7, 1921, the best quotations we can get on the grade of white pine lumber we require for manufacturing our hives and hive parts, is exactly the same quotation that was made us on April 1, 1920—and we cannot get a lower quotation. **Lumber comprises fully 75 per cent of our product.**

## SOME PLAIN FIGURES

We ask every fair-minded beekeeper to study the following table a moment. This table takes as a basis of comparison $100 worth of raw material in 1913, and shows what this same $100 worth of raw material cost us in 1920, and the per cent of increase. It also takes $100 worth of our goods in 1913, and shows what this same $100 worth of goods costs the beekeeper in 1921, and the per cent of increase. Note how very much less the increase of our prices than the increase of the raw material (and our labor cost has increased 70 per cent since 1913, also).

### PRICES OF RAW MATERIALS

|  | 1913 Costs. | 1920 Costs. | Per Cent Increase. |
|---|---|---|---|
| Pine | $100 | $273.33 to $333.00 | 173% to 233% |
| Basswood | 100 | 419.00 to 451.00 | 319% to 351% |
| Cypress | 100 | 273.52 to 302.00 | 173% to 202% |

### PRICES ON ROOT'S GOODS

|  |  |  | Per cent Increase |  |
|---|---|---|---|---|
| 1913 | 1920 | 1921 | 1920 | 1921 |
| $100 worth of hives | $164.32 | $253.81 | 64% | 154% |
| $100 worth of sections | 226.08 | 382.60 | 126% | 282% |
| $100 worth of foundation | 141.70 | 157.49 | 41% | 57% |

You can learn from this table that lumber prices as quoted in 1920, can fall more than 100% of the price of 1913, and yet show a greater increase of cost than the increase of the present prices of bee supplies.

Railroad freight rates have so greatly increased that our freight bills amounted to $75,000 more in 1920 than the same amount of freight from and to the same points would have cost us in 1913.

We would have been justified in advancing to our present prices a year earlier than we did, as most manufacturers in all lines did do. Had we done so then, our beekeeping friends would have expected it—but they would not have got one year's supplies, much of which they bought at a figure below the manufacturer's cost.

## THE SITUATION TODAY

Prices of lumber of the grade we mostly use are not lower today than the average price of the same grade of lumber during 1920. Large lumber operators tell us this price is up to stay up, because of scarcity. This is the big item in our manufacture. The price we pay for labor is still the highest figure. The price of metals is somewhat lower, but that price is still higher than the advance provided for in our catalog prices.

With these price facts placed squarely before our beekeeping friends, we say to them that our prices are warranted and necessary. Another season we expect they may be lowered. But we do not hope that we can lower them during the beekeeping season of 1921. We wish we could.

**THE A. I. ROOT COMPANY, Medina, O.**

# AMERICAN BEE JOURNAL

MARCH, 1921

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SKEPS COVERED WITH STRAW ROOFS. COTSWOLD, ENGLAND.
Photo by A. H. Bowen.

## MUTH'S IDEAL BEE VEIL $1.50

MEET GUY LESTOURGEON, SAN ANTONIO, TEXAS, the president of the American Honey Producers League. He's a real man, fighting for a real League, wearing a real Bee Veil.

### WE HAVE A STOCK OF LEWIS BEEWARE

waiting for your order. Send us a list of your requirements and we will quote attractive prices on quality goods. Write for our catalog.

### SEND US A SAMPLE OF YOUR HONEY

and name your most attractive price delivered to Cincinnati. We pay you the day shipment is received.

### WAX—OLD COMBS

We pay you the highest market price for rendered wax less 5c per pound rendering charges. Our rendering process saves the last drop of wax for you. Write for shipping tags.

**BEES---Two Frame Nuclei with Queens $8.50**

**ORDER THEM EARLY**

**THE FRED W. MUTH CO.**
**PEARL AND WALNUT STREETS**
**CINCINNATI, O.**

---

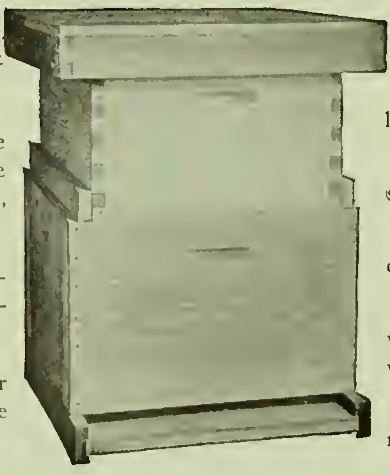
# MODIFIED DADANT HIVE

Your present brood equipment can be put above the Modified Dadant hive used as full depth supers.

Features are: Deep frames, large one-story brood-nest, frame space ventilation, excellence in wintering, swarming easily controlled.

Glance at this illustration to compare this hive with "Standard" Langstroth hive.

You can get 40 per cent greater brood-comb area than in the "Standard" ten-frame Langstroth.



### MODIFIED DADANT HIVE FEATURES

1. Eleven frames, Langstroth length, Quinby depth.

2. Frames spaced 1½ inches for swarm control.

3. Extracting frames 6¼ inches deep.

4. Dovetailed body, regular reversible bottom and metal roof cover with inner cover.

5. Langstroth "Standard" equipment easily used with this hive.

**For free booklet write any distributor of Lewis "Beeware," or to**

**G. B. LEWIS COMPANY, Watertown, Wisconsin**
**DADANT & SONS, Hamilton, Illinois**

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Good stock, plus long experience in shipping bees make it profitable to buy package bees or nuclei.

*Write for my new circular*

**R. V. STEARNS**
**BRADY, TEXAS**

**Double Your Dollars**

**You can gather Roots and Herbs and Grow Medicinal Plants while Hunting Bees**

Ginseng $15 Golden Seal $5 per pound and many others

The most profitable. The most healthful and the most enjoyable

OUTDOOR OCCUPATION

Send for price list and free particulars

How to know them and how to grow them

**O. A. TWITCHELL. Reg. Ph. and Herbalist**
**Box 9, West Milan, N. H.**

**FOREHAND'S THREE BANDS**

**THE THRIFTY KIND**

In the year before us it is our intention to give the very best service possible and to please every one that does business with us. It is our intention to give better service and better bees and queens than we have ever done before.

We have spent 29 years rearing queens on an extensive scale. During this time it has always been our intention to bring our bees up to a standard **surpassed by none, but superior to many.** We have been constantly improving the thriftiness, hardiness, gentleness and beauty of our bees.

We are now booking orders for May and June delivery. We still have several hundred pounds of bees with queens and several hundred extra queens to offer for May delivery. Write for circular giving full information and prices.

**W. J. FOREHAND & SONS FT. DEPOSIT, ALA.**

**QUEENS AND BEES**

We are now booking orders for spring delivery.

**NUCLEI ON ALUMINUM COMBS**

| | |
|---|---|
| 2-Frame nucleus without queen | $6.00 |
| 3-Frame nucleus without queen | 7.50 |

**PACKAGE BEES**

| | | |
|---|---|---|
| 1 lb. Package | 1 package, $3.00 | 12 packages, $2.85 |
| 2 lb. Package | 1 package, $5.00 | 12 packages, $4.75 |
| 3 lb. Package | 1 package, $7.00 | 12 packages, $6.60 |

Add price of queen desired.

| QUEENS | 1 | 12 | 50 |
|---|---|---|---|
| Untested 3-band Italian | $1.50 | $15.00 | $55.00 |
| Tested 3-band Italian | 2.50 | 27.50 | 112.50 |
| Select tested 3-band Italian | 3.50 | 37.50 | 150.00 |

We guarantee safe arrival.

**PATTERSON & WINTERS, Jourdanton, Texas**

**Pure Italian Queens of the Best Known Strain**

Booking orders now for spring delivery of two-frame nuclei, two-pound packages, and full colonies

| Prices | 1 | 12 |
|---|---|---|
| Untested | $1.50 | $14.50 |
| Tested | 2.25 | 24.00 |
| Select tested | 3.00 | 30.00 |

Two-frame nuclei with untested queen. $6; 25 or more, $5.50.
Two-frame nuclei with tested queen, $6.75; 25 or more, $6.25.
Two-pound package hybrid bees, each $4. Add price of queen wanted.

I have for sale 50 colonies black and hybrid bees in factory-made pine hives, 8-frame Langstroth dimensions, most comb drawn from wired foundation, shallow super. **with** frames included.

Price on board Bagwell, Texas, $8.50 per colony. Will sell in lots of five or all to one party.

No disease near here. Health certificate with all I have for sale. Safe arrival and satisfaction guaranteed.

P. S. Terms one-fourth with order, balance due at shipping time.

**BAUGHN STONE, Manchester. Texas**

# DOVETAILED CYPRESS HIVES

We are manufacturing a full line of supplies from good, soft light **Cypress.** For hive bodies, covers and bottoms we do not think it can be excelled. People are just beginning to appreciate the good qualities of this wood. All of our supplies are of standard dimensions, bodies are dovetailed. We make both one and two-piece covers. Bottom boards are made of full seven-eighths inch lumber tongued and grooved together.

| | |
|---|---|
| Five dovetailed cypress hives, complete, 10-frame | $16.00 |
| Five dovetailed pine hives, complete, 10-frame | 10.50 |
| Five one-piece covers, cypress, 10-frame | 5.00 |
| Five bottom-boards, full seven-eighths cypress | 4.00 |
| Hoffman frames, per 100 | 7.50 |

**Send for Catalog**

## ITALIAN BEES AND QUEENS

### QUEENS—Nothing but three-banded Italian Stock

All we have to say for them is, if they don't suit you, return them within six months and get your money back.

Untested ---------- one, $2; $18 per dozen

### NUCLEI

Choice three-banded Italian stock on good worker combs full of brood, with plenty of bees. We have a splendid lot of these that we can ship early; queens were reared late last fall and can be shipped loose on the combs without being caged.

Two-frame nuclei, with tested queen ---------- $10 each

### TWO-POUND PACKAGES

We can furnish two-pound packages of bees, full weight given and satisfaction guaranteed in every respect.

Two-pound package, no queen ---------- $7.50

**Write for discounts on orders of ten packages or more.**

### FULL COLONIES ITALIAN BEES WITH TESTED QUEENS

This is the cheapest way to buy bees, as they will cost less than the hives nailed and painted and the bees bought elsewhere.

| | |
|---|---|
| Full colony, with tested queen, in eight-frame hive | $20.00 |
| Full colony, with tested queen, in ten-frame hive | 22.00 |

---

HELENA, GA. **THE STOVER APIARIES** MAYHEW, MISS.

**Bees quoted from Mayhew, Miss., only.**

**LILLY'S**
Established 1885

Seattle
Yakima
Ellensburg
Wapato
Portland

HEADQUARTERS FOR

**LEWIS BEEWARE
DADANT
FOUNDATION
WESTERN PINE
HIVES**

*Write Us. It Pays*

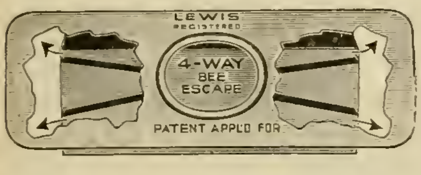
**LILLY'S**
Established 1885
The Chas. H. Lilly Co.
Seattle, Yakima, Portland

# FOR SALE

We make a specialty of shipping 2-frame nuclei. Combs are drawn from full sheets of foundation wired in Hoffman frames. Combs will be well covered with bees, and filled mostly with sealed brood and sufficient stores to do them while on their journey. Health certificate with every shipment. Safe arrival guaranteed. No more orders taken than can be filled promptly. Price of each two-frame nucleus, without queen, $5.00. Prices of queens are as follows: Untested: 1, $1.50; 6, $8.00; 12,, $15.00; 50, $60; 100, $100. Tested queens each, $2.50. When queen is wanted, add price of queen to that of nucleus. We begin shipping nuclei with untested queens May 1, but can ship nuclei with tested queens and without queens as early as April 15. Book your order now by sending in one-fourth of the amount of order. The balance you may send just before shipping date. Three-banded Italians only, and as good as can be purchased.

**COTTON BELT APIARIES**
**ROXTON, TEXAS**

## Lewis 4-Way Bee Escapes



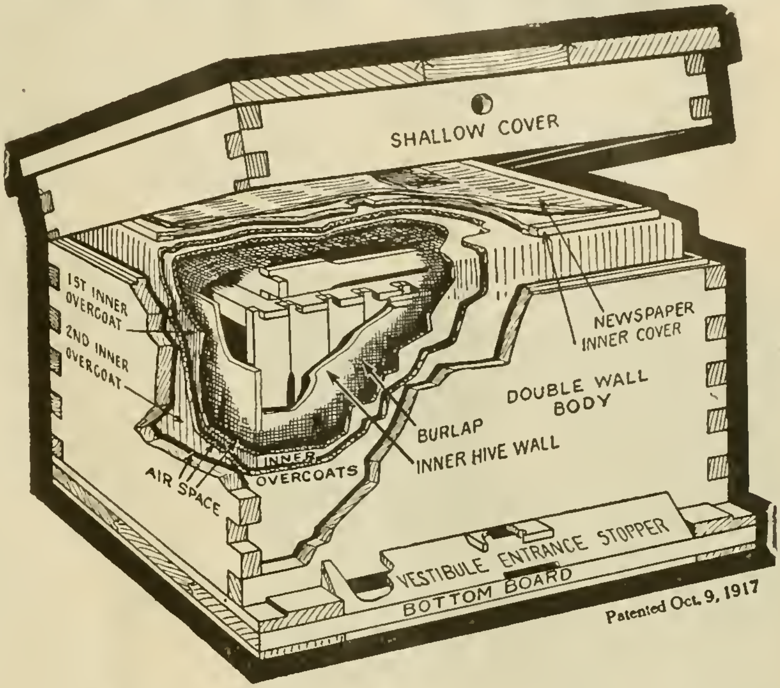
Four exits from supers. Fits all standard board Springs of coppered steel. Made of substantial metal.

Made by
**G. B. LEWIS COMPANY,**
Watertown, Wis., U. S. A.
Sold only by Lewis "Beeware" Distributors.

# WINTER PROBLEM SOLVED

—BY THE

# HIVE WITH AN INNER OVERCOAT



Furnished with Jumbo depth or Standard Hoffman Frames.

In your purchase of hives for the coming season, consider the fact that if well taken care of, they should last a life time. A life time matter is a serious one and nothing but the best that money can buy should have your consideration. The Hive with an Inner Overcoat is the best on the market as to material, workmanship, and efficiency. The outside wall is made of ⅞ material, the best for the purpose. Any extra cost over ordinary hives, spread over its life time, is very low. The saving in bees in a single winter, may more than pay for the entire investment. Winter losses in ordinary hives during the winter of 1919-20, in many cases, were 75 per cent, or more. What a tremendous loss. The Hive with an Inner Overcoat will winter normal colonies, without loss.

Send for a special circular showing large illustrations. New 1921 illustrated catalog of beekeepers' supplies now ready. Send us a list of your requirements for the coming season.

TIN HONEY PACKAGES

2 lb. Friction top cans, cases of 24
2 lb Friction top can , crates of 612
2½ lb. Friction top cans, cases of 24
2½ lb. Friction top cans, crates of 450
5 lb. Friction top pails, cases of 12
5 lb. Friction top pails, crates of 100
5 lb. Friction top pails, crates of 200
10 lb. Friction top pails, cases of 6
10 lb Friction top pails, crates of 100

Special prices on shipments direct from factory in the East or West:

| | |
|---|---|
| 100 5-lb friction top pails | $ 8.50 |
| 200 5-lb friction top pails | 16.00 |
| 100 10-lb. friction top pails | 12.50 |
| Pint Mason jars, flint glass, per gross | 9.00 |
| Quart Mason jars, flint glass, per gross | 10.00 |

**A. G. WOODMAN CO.**
**GRAND RAPIDS, MICH., U. S. A.**

## The Diamond Match Co.

(APIARY DEPT.)

MANUFACTURERS OF

**Beekeepers' Supplies**

**CHICO, CAL., U. S. A.**

Dadant's incomparable Foundation is always kept in stock. Western Beekeepers can be supplied advantegeously.

BEEKEEPERS, wherever they may be located, before deciding where to obtain supplies, should write to The Diamond Match Co. for prices, and for their Beekeepers' Supply Catalogue.

This Company are the largest manufacturers in the world who make Bee Supplies. They own their own timber lands, mills and factories, and supply goods direct from the tree to the beekeeper.

Full advantage of this low cost of production is given to the purchaser.

The Apiary Department (which is in charge of experienced supply men, who are also practical beekeepers) maintains a constant excellence of product and offers unsurpassed service.

**The Diamond Match Co.**

**Aplary Department** **CHICO, CAL., U. S. A**

### THE AULT 1921 BEE SHIPPING CAGE—Patent Pending

1st. It is a dark cage, much more so than the open screen cages we have been shipping in in the past.

2nd. The feeder uses pure sugar syrup. Better than Honey or Candy to ship on; it contains water as well as feed.

3rd. Feeders are made more substantial, one-third larger, and have screw cap that will not jar out.

4th. Instead of one small hole, we now use a cotton duck washer in the screw cap that has proven to overcome all the objections found to the liquid feed method.

5th. The Cage is one piece screen wire, protected by thin boards on the outside. Send for circular describing the cage in detail, prices, etc.

ORDERS are coming in daily for 1921 SHIPPING.
Will book your order with 20 per cent down, balance just before shipping

**QUEENS** **PACKAGE BEES** **QUEENS**

My free circular gives prices in detail, etc. Safe delivery guaranteed within 6 days of shipping point. We ship thousands of pounds all over U. S. A. and Canada.

pound pkg. bees $3.00 each, 25 or more $2 85 each
2-pound pkg. bees $5.00 each, 25 or more $4.75 each
3-pound pkg. bees $7.00 each, 25 or more $6.65 each.
F. O. B. shipping point. Add price of queen wanted.
1 Untested Queen $2 each, 25 or more $1.75 each
1 Select untested, $2.25 each, 5 or more $2 each.
1 Select Tested Queen $3.50 each, 25 or more $3.00 each
1 Tested Queen $3.00 each, 25 or more $2.70 each

**NUECES COUNTY APIARIES** E. B. AULT, Prop. **CALALLEN, TEXAS**

## "SUPERIOR" FOUNDATION. Yes, we are ready for the rush

Many tons now ready for shipment, and our machines are running to utmost capacity. Use the best. If your dealer can't supply you, write us for price, stating quantity required. We also accept beeswax for foundation or supplies.

**"Everything in Bee Supplies."**

SUPERIOR HONEY CO., Ogden, Utah **(Manufacturers of Weed Process Foundation)**

## PURE ITALIAN QUEENS, NUCLEI, FULL COLONIES

**1921 Prices. Orders booked for spring and summer delivery.**

Untested, 1 to 12, $1.50; 12 or more, $1.25 each.
Select untested, 1 to 12, $1.75; 12 or more, $1.50 each.
Tested, 1 to 12, $2.50; 12 or more, $2.25 each.
Select tested, suitable for breeders, $5 each.
Two-frame nuclei, $5 each. Add price of queen wanted.
Eight-frame colony, $15; 10-frame colony, $17.50.
Tested queen in all of these, and all good combs.

Health certificate with each shipment. Safe delivery in United States guaranteed. Satisfaction everywhere. Twenty-five per cent books your order, balance at time of shipment.

**JENSEN'S APIARIES, Crawford, Miss., R. F. D. No. 3**

## WESTERN BEEKEEPERS!

We handle the finest line of bee supplies. Send for our 68-page catalog. Our prices will interest you.

**The Colorado Honey Producers' Association, 1424 Market St., Denver, Colo.**

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America's Leading
**Poultry Paper**
Showing Champions in all Breeds.

**4** MONTH'S TRIAL SUBSCRIPTION **25c**

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# THE LARGE HIVE

**has proven to us through fifty years' experience its superiority. In fact we have yet to learn of a single beekeeper, once having used our larger hive ever returning to the smaller one. Its use is convincing of its superiority.**

**BEST WINTERING,** because if properly handled it gives strong colonies in fall, with abundance of stores on few frames, immediately above and behind the brood-nest.

**BEST HONEY PRODUCING,** because it gives large, strong colonies for the honey flow, and abundance of room for brood and honey. Shallow supers do away with queen excluders.

**BEST NON-SWARMING,** because there is ample laying room for the most prolific queen, ample storing room for the workers and ample ventilation for all.

**THE MODIFIED DADANT HIVE** has embodied in it all these advantages and lends itself readily to use with Langstroth equipment. Frames are Langstroth length, Quinby-Dadant depth, regular Hoffman style spaced, 1½ inches from center to center. Hives regular dovetailed, metal cover and reversible bottom.

**Try them and be convinced**
**Booklet for the asking**
**Ask for quotations on any size lot you want**

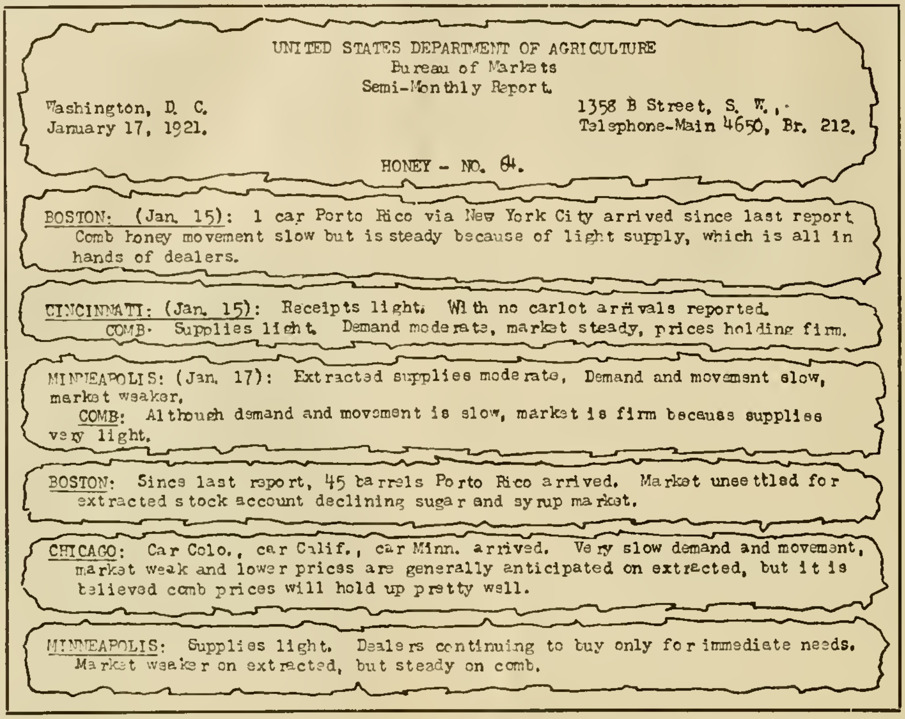
**DADANT'S FOUNDATION** EVERY INCH, EVERY POUND, EVERY TON EQUAL TO ANY SAMPLE WE HAVE EVER SENT OUT.

*Specify it to your dealer. If he hasn't it write us*

**DADANT & SONS, HAMILTON, ILLINOIS**

*Catalog and Prices on Bee Supplies, Beeswax, Wax Working into Comb Foundation and Comb Rendering for the asking*

# UNCLE SAM ON COMB HONEY



UNITED STATES DEPARTMENT OF AGRICULTURE
Bureau of Markets
Semi-Monthly Report.

Washington, D. C.
January 17, 1921.

1358 B Street, S. W.,
Telephone-Main 4650, Br. 212.

HONEY - NO. 64.

BOSTON: (Jan. 15): 1 car Porto Rico via New York City arrived since last report. Comb honey movement slow but is steady because of light supply, which is all in hands of dealers.

CINCINNATI: (Jan. 15): Receipts light. With no carlot arrivals reported.
COMB: Supplies light. Demand moderate, market steady, prices holding firm.

MINNEAPOLIS: (Jan. 17): Extracted supplies moderate, Demand and movement slow, market weaker,
COMB: Although demand and movement is slow, market is firm because supplies very light.

BOSTON: Since last report, 45 barrels Porto Rico arrived. Market unsettled for extracted stock account declining sugar and syrup market.

CHICAGO: Car Colo., car Calif., car Minn. arrived. Very slow demand and movement, market weak and lower prices are generally anticipated on extracted, but it is believed comb prices will hold up pretty well.

MINNEAPOLIS: Supplies light. Dealers continuing to buy only for immediate needs. Market weaker on extracted, but steady on comb.

This Proves Comb Honey is your best bet
Get First Grade Prices with Lewis Sections
See a 1921 "Beeware" Catalog. Write today
Ask us for your Distributors Name. It's free

**LOOK FOR**

BEE HIVES AND APIARIAN EQUIPMENT
BEWARE
WHERE YOU BUY YOUR
BEEWARE
WATERTOWN WIS. U.S.A.
MAKES THE FINEST.
COPYRIGHT, 1916, BY G. B. LEWIS COMPANY

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## G. B. LEWIS COMPANY, HOME OFFICE AND WORKS WATERTOWN, WIS.

Branches: Albany, N. Y., Memphis, Tenn., Lawyers (near Lynchburg,) Va.

AMERICAN BEE JOURNAL

VOL. LXI—NO. 3 HAMILTON, ILL., MARCH, 1921 MONTHLY, $1.50 A YEAR

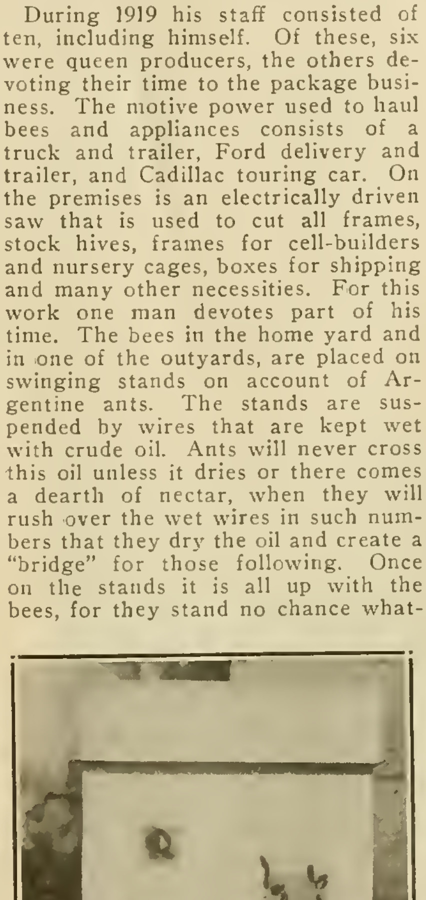
# GLIMPSES OF CALIFORNIA BEEKEEPING

BY BEVAN L. HUGH

BEEKEEPING as an industry has taken great strides during recent years in California as in other places. Comb-honey production is carried on by so few beekeepers and on such a small scale in California that it requires no mention here. Extracted honey is produced by the carload. In spring, when oranges bloom in the southern San Joaquin Valley and the prunes and apricots bloom in the Santa Clara Valley, beekeepers rent their bees to fertilize the blossoms at from $1 to $3 per colony. One beekeeper of whom I have recollection had over a thousand colonies in prune, pear and apricot orchards, averaging better than $2 per colony. Until after blossom time the bees are hauled by truck to sage, and later to alfalfa locations. In many localities bees are moved to honeydew pastures later in the season. When sage is in bloom no number of colonies can overstock a location.

The most interesting, most scientific of all the vocations under the name of beekeeping, is the rearing of queen bees in the modern way and turning them out by the thousands. After July 1 until the season closes about October, J. E. Wing, of San Jose, Calif., ships over a hundred queens per day. From March until July 1 this well-known queen rearer devotes his time to shipping queens and pound packages of bees, nuclei and colonies. (With the production of honey he has nothing to do). He devotes his time exclusively to the production of bees and queens. Hundreds of pounds are shipped every day in the spring, and it is stated that San Jose ships more bees and queens than any other center in the world. Several other beemen ship from the San Jose express office besides Mr. Wing. In his work Mr. Wing has departed from almost all the set rules as advocated by Doolittle, Root, Pratt and other experts, and "according to Hoyle" has no place in his vocabulary. He has worked out a system of his own.

During 1919 his staff consisted of ten, including himself. Of these, six were queen producers, the others devoting their time to the package business. The motive power used to haul bees and appliances consists of a truck and trailer, Ford delivery and trailer, and Cadillac touring car. On the premises is an electrically driven saw that is used to cut all frames, stock hives, frames for cell-builders and nursery cages, boxes for shipping and many other necessities. For this work one man devotes part of his time. The bees in the home yard and in one of the outyards, are placed on swinging stands on account of Argentine ants. The stands are suspended by wires that are kept wet with crude oil. Ants will never cross this oil unless it dries or there comes a dearth of nectar, when they will rush over the wet wires in such numbers that they dry the oil and create a "bridge" for those following. Once on the stands it is all up with the bees, for they stand no chance whatever, the ants gaining complete mastery. They attack the bees and queen and carry off the honey. In a short space of time powerful colonies are reduced to lugubrious cemetaries. The ants are always victors when they once are able to get on the stands. It is necessary to see that the wires are kept constantly wet with the thick molasses-like oil.



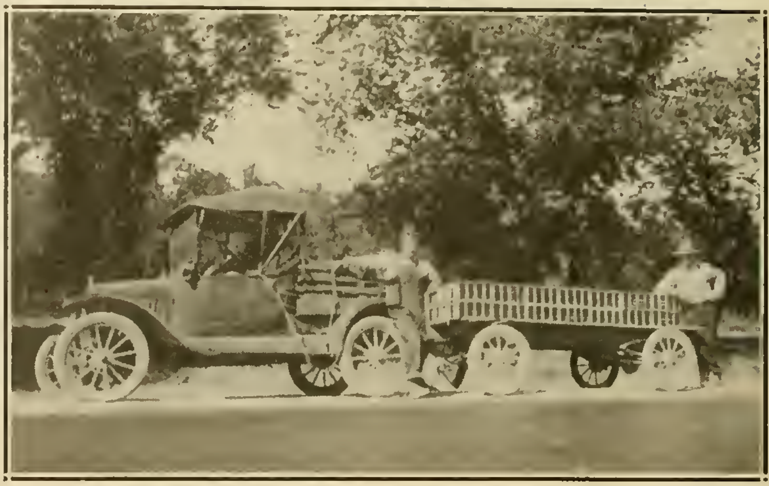
The baby nucleus for mating young queens.

When grafting, one has to be very careful not to lay a stick of cells where ants may reach it, for the pests at once attack the chyle and larvæ and get into the frame of brood held by the operator and thus spoil some cells.

The season for rearing queens and shipping packages usually commences around San Jose (pronounce it Sanozay) during March. In early seasons February is the month when operations begin, but owing to cool rains and heavy frosts, nothing much of importance in actual bee work was done last year until the middle of April. During the winter a thousand twin mating baby nuclei were made up in addition to a great variety of other supplies, such as putting frames in shape for use, nailing and painting hives, etc. The baby nuclei with their thousands of midget frames and newly-invented covers were what interested me most. Mr. Wing and his assistant breeders, prior to this year, used the Root cover on their mating nuclei, but they wanted a system whereby they could tell at a glance just what was going on within each hive without having to open it or refer to a note book. Last season a block of wood that could be put in several positions was used as a signal. There were two drawbacks to this system, however, and these failings led to the present system. These drawbacks were that when a cover was lifted for the purpose of inspection the block might fall off or change its location, which would result in confusion. The other disadvantage was that the date had to be written when virgins or cells were introduced or when queens were caged. The Root nucleus box is employed, but instead of the inner wood and outer paper covers being used, a double wood telescopic cover, with ventilating air space between, is found to serve to better advantage. On the side of the cover are galvanized iron signals pointed one end and square the other, made to protrude above the level of the covers or to fold below the level of the cover so as to allow nuclei to be piled on the truck when moving. On the painted cover is a set of figures arranged in a circle representing the dates of the month to 31. From the center radiates an arrow after the manner of the hand of the clock. With these signals all that is to be known about the interior workings of the nucleus may be read at a glance, and after the operator has learned the different signals he may walk by a nucleus without stopping, and know whether it needs a cell or a virgin, whether a laying queen requires to be caged or whether the nucleus requires bees, brood or honey, or all three.

All are represented by one signal on the side of the nucleus and the dates on the cover. Bees, brood, honey, bees and brood, bees and honey, honey and brood required are all represented by the other signal, and it seems queer that so much can be said with so few signals; and the beauty of the whole system is that absolutely no writing is required whatever, and everything goes along in fine shape. No queen is allowed to leave the yard that has not laid a frame full of eggs, then there is no guess work, and customers are satisfied.

Another innovation is the "stock-hive." It is the "mother" to all the baby nuclei. One stock-hive takes care of the needs of from forty to fifty nuclei. It is a hive containing frames as used in the nuclei with seventeen to the body and may be tiered three or four high if necessary. In it is housed a regular colony with queen, workers, drones, eggs, larvæ, pollen and honey. It's purpose is to supply whatever is required by the nuclei, such as eggs or larvæ, bees or brood, and it is much more convenient than putting three of the frames into a regular Langstroth frame. All that is necesary is to open a colony and remove the required frame and replace with the one taken from the nucleus.


A big load of package bees on the way to the express office.

Mr. Wing's system of swarm box, cell builder and nursery cage is similar to those in use by most queenmen, with slight variations. The cell cups, in which the grafts are made are all home-made, being dipped forty at a time by a scheme of his own. Instead of the cells being forced into the little blocks with a fastener the reverse end, they are secured by means of hot wax to flat pieces of wood one-eighth inch thick and seven-eighths inch square. Twelve of these are put on a bar by means of hot wax and are then ready for grafting. After the sticks have once been waxed they are good for all time, and when working in the sun are always ready for immediate use; all that is necessary is to press the cell stick on with the thumb and forfinger. The larvæ used for grafting are about twelve hours old. All grafting is done dry, no jelly being used, and we find that fully as many are accepted by this method as when jelly is used, without all the extra trouble and time wasted. The grafts are then put in the swarm box to be accepted by queenless bees. The swarm box is in use all summer without changing bees, young emerging bees and sealed brood being given whenever necessary to keep up the strength of the cluster. The swarm box holds three frames, two of brood and honey and one containing grafts. It is always queenless except when a virgin drifts in and later commences to lay, then all operations are delayed until she is removed. The frame of cells, containing three bars of about 36 to 40 cells, is placed between the two frames of brood and honey, and in the specified time is removed and any unaccepted cells removed and replaced with accepted cells from another swarm box. Removing the sticks from the bars is a simple process, a slight pressure of a hive tool between the cell stick and the bar soon pries them loose, and another cell put in place by a pressure of the thumb and forefinger. The swarm box bees give the cells all the chyle that is necessary for them to be accepted by the cell builders.

The cell builder is a colony with young larvæ above and queen below an excluder. Two or three frames of cells are placed between frames of young larvæ and left for ten days from the time of grafting, for the bees to complete. After completion they are put either in nursery cages or are introduced direct to a queenless nucleus. Sometimes in the spring they are put into an incubator run by electricity, but this is not always necessary. If the completed cells are put in nursery cages they are returned to the colony from which they were removed until emerged, when the virgins are placed wherever required.

But queen-rearing is only part of the business. The combless package branch takes considerable time in shaking bees, building up colonies in order to make them of sufficient

Bliss Damon with a mating yard of baby nuclei, in San Joaquin Valley, in willow honeydew region.

strength to shake, making and repairing cages, making candy for long distance shipments, repairing the tin cans used for liquid feed, making the liquid feed and a great deal more as well. A large number of nuclei and colonies are also shipped. This is a part of the work of the package men, not the queen men.

Many packages have gone as far as the upper country in British Columbia and have arrived in good condition. Orders for packages are mostly for the two-pound size, as the one-pound package is found to be insufficient in bees. Tons of bees are expressed every year, and many thousand queens sold.

In San Jose during the latter part of June the flow practically ceases and the queen-rearing outfit is moved to the San Joaquin Valley, where there is an abundance of honeydew. This is very valuable for making increase, as the bees gather considerable honeydew. The drawing of comb progresses rapidly and the bees in the baby nuclei require little help from the stock hives. During this flow (which lasts from July until winter rains wash the sweet secretion from the willows) a great number of queens are reared. Queens reared during this flow are much larger and finer than those reared at any other time of the year. Thousands of queens are sent to honey producers at this time of the year, since they find fall the best time to requeen, as the queens will be young and energetic in the spring.

The moving of the queen-rearing yard to the San Joaquin Valley makes it possible to continue rearing queens, as heretofore it has been necessary to discontinue operations when the flow ceased at home. The remarkable feature about the moving of the yard was that everything was in full operation, grafting having been done the day the bees were loaded and layers caged the day they were unloaded. The bees were loaded after sundown and unloaded before daylight at their destination, 80 miles distant, and operations were resumed as soon as the bees had settled down. Queens were in all stages of development, and no time was lost by moving.

## A METEOR IN BEEKEEPING

(Adapted from the Swiss Bulletin D'Apiculture.)

June 15, 1918.

My Dear Friend: I have become a beekeeper, like yourself. That will interest you, because it was after my visit at your apiary that I took up the idea to have bees also. I am an enthusiast, although my apiary is just a beginning (4 hives), but in such fine condition that all I had to do after buying them was to put on supers. I spend all my spare time there. It is just fun to smoke them, take up the supers and examine them. Every week there is some gain. I am going to have a big crop of honey. It is delightful.

July 25—I believe I am getting the bee fever. My bees have all filled their supers and I put on several more. I am sorry I bought only 4 colonies, according to your advice. If I had had a little more backbone, I should have bought 40 instead of 4. and I'd be in clover, literally. Lots of clover honey, as it is.

August 20. My Dear Friend: Beekeeping is a gold mine. I feel as if I were a bee myself and had wings. I could fly. Just think, I have harvested 300 pounds of honey and had 3 swarms besides. If I had only bought 40 colonies, it would make a small fortune. I am going to make a big success of beekeeping. It's a regular gold mine, especially if a man understands it as I do. They talk of bad seasons, but there are flowers every year, aren't there? The only thing to do is to learn how to manage them. I'm making lots of plans. You read about that man who had 12 queens laying, all at one time, in a hive. I believe I can beat that and have hives as large as a small house. Then we'll get the honey! Just let me show you, if you're from Missouri! It's getting late in the season, but next year, we'll be in the wind. Just wait a bit.

May, 1919—Here we are again. I have 25 colonies. I bought 18 and they cost me a heap of money, but it pays. I'll have 50 by fall and some 3,000 pounds of honey. I believe I ought to more than double them, if I manage it right, and I am sure I know how.

July, 1919—Can you tell me why it is that some colonies don't prosper, while others are doing well? I tried to put several queens in 3 hives, and now instead of having more bees, they are queenless. It's befuddling. It's raining too hard when they ought to be piling in the sweets. There is a little honey, but not much. The bigger the hives, the less bees. These Dadant hives ain't got any bees in them—just a handful! They're a humbug. And the bees are cross! Never knew them to be so mean.

November 15—My bees don't have honey enough to winter. What shall I do? Sugar is too high to feed. Could I winter them on corn syrup? I'm going to try it. Those fellows who say that corn syrup isn't good for bees, likely never tried it.

March, 1920—Have lost half my bees in winter. I am getting disgusted. The bee business ain't what it's cracked up to be.

October, 1920—For sale immediately, 10 colonies, short of stores, and 40 empty hives, with about half the frames full of combs.

## STAR THISTLE

I wish to call attention to a weed that is even more important as a honey source throughout the Sacramento and San Joaquin Valleys than alfalfa. It is called "Star thistle." In its early growth it resembles the dandelion and has no stickers. Its growth is very slow, and about the middle of May it tops out and has many branches. On every branch form the buds of many flowers. The buds and flowers are the only part of the plant which have the stickers. The buds are entirely covered with long jaggers, and when they open out the jaggers turn out in every direction, forming a star from which the plant gets its name. The bloom is a deep yellow. It is spoken of as a pest throughout the State, as neither cattle nor sheep will eat it. Every vacant lot, pasture and the river bottoms are a yellow mat from the 10th of June until the heavy frosts come in the fall.

G. L. Ensign.

California.

Group at the Wing apiary. Left to right: W. A. Rafael, Harry R. Warren, J. E. Wing, Alice Salisbury.

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## THE EDITOR'S VIEWPOINT

### The Honey Producers' League

As we go to press word comes from Indianapolis that the annual meeting of the American Honey Producers' League was a big success. There was much enthusiasm manifested and $6,000 was raised by those present for an advertising campaign to bring honey to public attention. The policies of the League were endorsed by beekeepers and members of allied trades. The success of the new organization now seems assured.

### Kansas Honey Producers' Association Joins

After a talk from Mr. Paddock on co-operation, and a few words from our editor, the Kansas Honey Producers' League voted to join the American League. Tally one more.

The officers of the Kansas League for the ensuing year are: President, Frank Hill, Sabetha; Vice President, A. V. Small, Augusta; Secretary-Treasurer, Dr. J. H. Merrill, Manhattan.

These men are all "live wires." (This is a modern expression, but there is none better). Mr. Frank Hill insisted that he was not a good parliamentarian and would make a poor President. But he is energetic, a good beekeeper and not afraid to speak. So we are assured that he will study parliamentary usage and will prove to be just the man for the place.

### The Spanish Needles as Honey Producers

Some of our beekeepers have expressed doubts as to the Spanish needles being a good honey plant, because they have never seen the bees working upon them. If they had attended the Kansas meeting at Manhattan, they would have no longer any doubts upon this. Dr. J. H. Merrill, apiarist in charge, is a very good man to draw out everything there is in a meeting, and his calls for reports from the different counties of the State were readily and fully answered. Nearly every county reported honey from Spanish needles.

At that meeting the statement was renewed that alfalfa does not produce honey at an elevation of less than a thousand feet above sea level. There is an exception, however, and that is in a district below sea level, the Imperial Valley of California.

Some beekeepers criticised the statement that honey is sometimes harvested from the sunflowers. But there are many plants which furnish honey in one country and not in another. During my visit in Switzerland, in 1913, a beekeeper asked me whether I was sure that bees secured honey from white clover in America, because, he said, none is produced from white clover in Switzerland. And that appears to be true, in some localities at least.

### Fire at Henry Dadant's Home

In the forenoon of the 17th of February, the Dadant people were very much startled by a fire alarm from the home of Henry C. Dadant. Sparks from the flue caused a fire in the roof. A strong breeze was blowing and before the Hamilton fire department could get two lines of hose pouring water on the building the roof was almost completely destroyed. The furniture was removed, much damaged by water. Our friends will be glad to hear, however, that a good portion of the loss is covered by insurance. But it is a great inconvenience to be driven out of one's home in winter. The two little girls shown on the February cover page are Henry's daughters.

### How Small a Colony May be Wintered?

The required size of a colony to be wintered successfully depends much upon the location, the winter, the food, the number of flying days, etc. We have wintered colonies which might have been called nuclei, containing perhaps not over a quart of bees. A mild winter like the present one is exceedingly favorable to weak colonies, if the food is right. But until March and April are over, we can hardly be sure of safe wintering. We have seen bees dwindle as late as May, when the spring was backward and cold. Better not take chances, in the northern countries at least, and have all your colonies strong for winter.

The condensation of moisture into frost, inside of the hive, during the coldest days, is not necessarily a bad sign, if on warm days the bees have enough warmth to thaw it and it runs out of the entrance. But a colony which is kept warm by ample covering will have but little condensation of moisture, because it will consume less than a weaker one and because its moisture will evaporate in the absorbents above, if such absorbents have been supplied.

Whatever you do, if your bees are out-of-doors, beware of cold weather in March and April. This is for our middle and northern States, because, in the South, the only requirement is to see that the bees are not short of stores, and in many places they harvest honey, after March 1.

### The Work of the Colleges

I wonder whether the average beekeeper realizes how much good work the colleges are doing for our business. There are but few agricultural institutions now that do not teach the elements of practical beekeeping. There are but few of them that are not fitted to examine samples of bee diseases and give information and directions on treatment.

Some of our people seem to think that it would be better if beekeeping was not taught. They are afraid that it will increase the number of honey producers to where the business will not pay. But beekeepers are not made by any process of education. Those only who like bees and beekeeping can be educated to take proper care of bees, and it is right that they should be, for the slovenly bee owner is responsible for the dissemination of disease, just in the same way that the careless fruit grower is responsible for the dissemination of San Jose scale, codling moth, curculio, etc. The more practical beekeepers we will have, the less slovenly ones, the better they will unite upon advertising and holding prices at a reasonable level that will bring fair returns and secure ready sales.

There is no more danger of ruining the market by producing too much honey than there is of producing too much wheat. Some people are starving, just now, on this earth of ours, for want of bread. It is the distribution which is wrong and inadequate. Let us remedy it.

### Friendly Friends

Our friends' friends are our friends. By the same token our subscribers' friends should become our subscribers.—Italian Exchange.

### Honey-Soap

A honey soap is made in southern France, which they call "sapolimel." It is claimed that this soap foams and lathers abundantly, does not crumble, and helps the healing of chapped hands, chilblains, eruptions or other diseases of the skin.

### Attending Conventions

It is delightful to attend a convention of beemen in a strange locality and find smiling faces at the station. The first man that greeted me at Wilmington was Mr. C. L. Sams, who recognized me at the station. I was not left by myself a single minute after I reached my destination.

### Wild Beasts in North Carolina

Bears, deer, wild cats are not rare in some districts. W. B. Robinson, of Belvidere, N. C., had a lot of beehives destroyed by the depredations of bears.

### Pollen in January

W. W. King and C. L. Sams saw bees carrying pollen January 5 to 10 near Wilmington. Some say it is alder, others credit it to soft maple. The gallberry here gives the best honey crop. They have also a plant which they call "love vine," which yields honey.

### Tin Pans to Settle Swarms

Mr. J. A. Ratcliffe, of Washington, N. C., told of seeing a swarm pass over the church roof and arresting it with the beating of a bread pan with a big spoon. It not only settled the swarm, but broke up the church meeting, which ended in confusion and laughter. Did the bees hear the noise?

### Quebec Beekeeping

The report of the Minister of Agriculture, for the Province of Quebec, for the season 1919-20, contains a detail of the work done in beekeeping schools and demonstrations in Levis, Montreal and Joliette, by Messrs. Vaillancourt and Prudhomme. As many as 250 persons attended the beekeeping course in Montreal.

To those who might imagine that the Province of Quebec is too cold for good results in beekeeping, we will say that this report shows that the best crop in Quebec was harvested at Roberval, in the apiary of the Ursuline Sisters, and was of 4,020 pounds for 22 colonies.

### Errors in Renewals

It is not our custom to "talk shop" to our readers. But it is important to suggest to them that there are mistakes made by everybody in this world and that we are not infallible ourselves. So if any errors are made concerning your subscription, please drop us a card, with as much good nature as you are able to assume, and we will endeavor to correct mistakes. Other publishers make mistakes also.

### Cause of Foulbrood

It looks quite evident now that **Bacillus alvei** is a bacillus of putrefaction and not the cause of the death of the larvæ, in foulbrood. Cheshire must evidently have made some error in the test mentioned by him on pages 554-5 of his work, as he also made a very evident error when he stated that honey was not likely the means of transmitting it.

### Organization Wins

A very good argument in favor of a Honey Producers' League may be seen in the fact that the industries which are best organized secure best recognition. See the Railroad Brotherhoods. They got about everything they wanted during the war, while many industries went a-begging. UNITED WE STAND.

### Altitude and Nectar Secretion

In our February issue Mr. Small brought out an interesting point concerning the behavior of alfalfa in Kansas. The fact that below 1,000 feet it secretes little nectar, while yielding abundantly above that altitude is worthy of more than passing note. It stands to reason that if alfalfa behaves differently under such conditions other plants may do so also. Careful study of the influence of altitude as well as soil and climate on the secretion of nectar is important.

### The Miller Memorial

We would call attention again to the memorial to Doctor Miller. The decision as to the form it shall take will be left to the committee in charge and will be influenced by the amount raised. It is hoped to have all funds in hand by June 10, which is the anniversary of the Doctor's birth. Members of the committee are anxious that every beekeeper who admired Doctor Miller shall be represented in the memorial, whether his contribution amounts to a dime or a dollar. Contributions may be sent to this office or to any member of the committee, which was announced in our last issue.

### Marketing

Just now conditions looking to the future of the honey market are in the balance. There is a large surplus of extracted honey in certain quarters, while many local markets are bare. It is important that the beekeeper who has sold his own crop realize that the future market depends upon his assistance in moving the unsold honey. If the beekeepers who have sold out will help to handle this surplus the market will be stabilized at a higher price than will be the case if it is dumped upon the city markets to bring what it will.

The bottlers and big buyers generally are interested in buying at the lowest possible price. Should any considerable amount of honey be dumped onto the market under present conditions the price is likely to be depressed to the old-time low levels. There never was a time when it was more important to cultivate the local market.

### Acquaintance With Your Territory

The automobile and truck make it possible to take advantage of a honey crop located as far as fifty miles or more from your present apiary sites. In order to be thoroughly conversant with the opportunities thus presented, there is nothing better than a careful plat of your territory.

Topographical maps of most sections are available and may be obtained either by writing your State Geological Survey or the U. S. Geological Survey. These maps give altitudes of all points. Your own map, based upon these and including all information you already have, combined with actual trips for observation when the principal plants are in bloom should provide data worth a great deal. Get in touch with your county agent. He may apprise you of areas of sweet clover or alsike worth moving for.

### Watch for Shortage of Food

With the extremely mild winter we have had so far there is danger that the inexperienced beekeeper may allow his bees to become short of feed this spring. A mild winter means increased activity of the bees, and increased activity means increased consumption of honey. Bees which were put into winter quarters with a super-abundance will not yet be in need, but there are many cases where, for some reason or other, bees went into winter with only moderate stores.

The danger of starvation is not the only danger. When stores become short in spring, the queens stop laying, no more young bees hatch, and unless remedial steps are taken, the colony may dwindle away; or if it doesn't completely dwindle, its value for nectar gathering is seriously impaired.

Now is the time to see that your colonies have plenty of stores, not only to keep them alive, but to allow brood rearing to proceed uninterruptedly.

### Unseasonable Weather

The past winter has been unusually mild and for that reason bees with plenty of stores have wintered well. However, there is an element of danger for the spring season. As this is written (February 15) the weather is balmy as May, and the first of the soft maples are in full bloom at Hamilton. Fruit buds are swelling and there is every reason to expect severe injury to the fruit crop by later frosts.

The bees are humming merrily among the blossoms of the maples, and this new nectar and pollen will start brood rearing in earnest. Unless the beekeeper have a care, the brood-nests will be expanded beyond the ability of the clusters to protect when a change of weather comes, and there will be much chilled brood. Bees protected with suitable packing material are not likely to be seriously affected.

Brood rearing requires large quantities of honey, and this undue expansion so early in the season will rapidly deplete the supplies. It is very important that all colonies with a short supply be fed liberally to save from later disaster.

## THE PLEASURES AND PROFITS OF BEE DRIVING

By A. H. Bowen

The old straw bee-skep yields up its harvest of honey but once a year, and August and September are the two months when the rural skeppist "takes up" his surplus stocks which have accumulated during the swarming season, and appropriates what he feels to be his due.

Knowing no better or quicker way of honey taking than by killing the bees, he places the heaviest hives at dusk over a pit of lighted sulphur, and very soon the bee population tumble from their luscious combs into the pit below.

Happily, however, the number of villager's bees sulphured each autumn is growing fewer; for the skeppist nowadays is only too glad to rid himself of this distasteful massacre, by allowing the expert apiarist to drive out and save the bees; taking them away for the trouble of doing it.

The advantage of this practice is mutual. The skeppist receives his hives of honey free from bees, and without the taint of sulphur to the combs; whilst the apiarist can utilize the bees secured in a number of useful ways.

Given good weather, autumn bee-driving excursions prove both pleasurable and interesting, but the apiarist must first equip himself with some suitable bee-gear to enable the driving to be done rapidly, and without causing robbing or commotion in the cottager's bee-garden. To carry the bees away, light skeps are frequently used. My choice is for light boxes with screened top and ventilated sides, as these are compact and easily handled. Half a dozen of these, a pair of driving irons to hinge the skeps together while driving, a couple of skewers, a large skep with dome top, and some sulphur matches complete the outfit.

Personally, I usually carry a few queen mailing cages provisioned with candy, as it is sometimes convenient to cage the queens when found there and then, as then one knows where to find them.

When the bees are to be sent away, a little box of bee candy is screwed to the bottom of each crate to give extra food during confinement.

Of the old stocks, current swarms, and casts, the skeppist prefers to "take up" his new casts and the old hives because there is "virgin honey" in the former, whilst the latter being wrongly supposed to have an "old queen," are not thought suitable for stock. Thus the swarms with their freshly-combed hives are retained and being heavy are usually expected to stand the winter, for the skeppist abhors feeding of any kind.

As soon as the skeps have been marked for "taking," the bee driver is ready to commence operations.

Nothing is handier to stand the seething upturned hive upon while beating it than the stout cottage "pig bench," and this is generally pressed into service.

By means of the driving irons and skewer an empty skep is fixed above the inverted hive, and the junction made bee tight by winding round a length of sacking.

A vigorous tapping soon drives the bees with their queen into the dome above and in a few moments the lower skep is deserted. The tough nut sticks placed crosswise in each hive when first the bees are put in, act as do wires in a standard frame, and prevent the combs being broken or loosened.

When the queen has been caged, a sharp shake throws the bees into the traveling crate, the queen dropped in and the box is then placed back on the stand for the flying bees to settle.

Bee driving is not all "beer and skittles," however, owing to the curious kinds of beehives used.

Circular butter boxes and square cheese boxes are troublesome to deal with. The bees are slower than ever to run upwards. They collect in the corners, and the queen, if young and shy, finds plenty of places in which to hide herself.

A Cotswold bee garden in England.

Lard buckets, cardboard hat boxes and tin trunks are little better, though if only half occupied by combs they can be cut out, and the bees brushed directly into a carrying box.

When a field of charlock is in blossom over the hedge, much new honey will drop from the combs, and robbing then is only too easy to start.

A dull day, or a wet one has its advantages, for if shelter is near, under which to work, there is no robbing or stings; and the bees settle early.

As rapidly as emptied, each skep is placed for a moment over a hole containing a sulphur match, to stupify the remaining half dozen bees, which might have tormented the cottager's wife.

After a cup of tea, in the cool parlor, while the bees settle, and as dusk approaches, the boxes are closed up and conveyed back to the apiary.

### Dealing With the Bees

Frequently two or three pounds of bees are obtained from large, strong skeps.

Hived in the dark upon 6 drawn-out combs and rapidly fed, they develop into splendid colonies for the following season.

Where heather abounds the bees collect sufficient to keep themselves without feeding.

The surplus queens, after uniting two or three smaller lots together, can be utilized for re-queening purposes.

Many driven lots are distributed each autumn to districts where these cannot be obtained, and three to four dollars each is the average price which is paid. The true old English black bee is not now so frequently met with, hybrid bees being more numerous.

But in the more remote hamlets of our country-side, native bees are still found and preserved in the time-honored way.

Though the quaint owners permit their bees to be driven in the autumn time, they stoutly maintain that no bee home is more healthy or better than their own warm skep. Maybe they are right. At any rate their views and doings form an interesting link with the past.

England.

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This interesting article reminds me that, in the Carolinas, there are still tens of thousands of apiaries in box-hives and gums, which ought to to be transferred or driven in a similar manner to that described above. At Greenville, S. C., an old-timer greeted me with: "Do you reckon the kind of wood the gum is made of has anything to do with the crop of honey? My daddy allowed that he could get twice as much honey out of the gum-tree hive as out of any other kind." Likely those old country skeppists similarly consider the skep as much better than any other hive. —Editor.)

## A PLANT HONEYDEW FROM THE DOUGLAS FIR

By John H. Lovell

British Columbia and Washington State west of the Cascade range are largely covered with a magnificent coniferous forest, in which the trees are 200 to 300 feet tall. This dense forest in which the great trunks are separated by only a few feet is due to a mild temperate climate, and an annual rainfall exceeding 60 inches. The most common tree is the Douglas fir (**Pseudotsuga Douglasii**), also called red or yellow fir, which forms not far from seven-eighths of the timber. Occasionally there come reports of large quantities of honeydew gathered from the Douglas fir. A beekeeper at Victoria states that in the forenoon the ground under many of the firs, particularly isolated trees, will be well spattered with the exudation, and the needles studded with pale amber diamonds. If there are bees in the neighborhood there will be a large number of them busy gathering the sweet liquid. In some years two or three supers of sections will be gathered from this source. The honey is fair in quality, pale amber in color, with rather dark cappings. It crystallizes quickly.

"Fir sugar" was known to the Indians of British Columbia long before the discovery of America; and in recent years its presence has been repeatedly reported by beekeepers, but it does not occur every year. The writer has been inclined to believe that it was an excretion of either plant lice or bark lice. Some years ago Gates observed honeybees collecting liberal stores of honeydew from spruce trees on the campus of the Agricultural College at Amherst, Mass. The sweet excretion came from scale insects (**Physokermes piceae**), which resembled dormant buds on the twigs. Pellett has also reported honeybees as gathering honeydew from the Norway spruce on the grounds of the Ontario College at Guelph, Canada. Examination showed that the sweet liquid came from the same species of scale insect. The pine-leaf scale(**Chionaspis pinifoliae**) also occurs on various species of pine and spruce in all parts of the United States. From the base of the leaves of the spruce pine (**Pinus glabra**) in Florida, honeybees have been seen to gather a sweet liquid, which was undoubtedly of insect origin. Thus, in the absence of any definite evidence to the contrary, it seemed probable that the sweet substance gathered from the Douglas fir was also an excretion of Hemipterous insects.

But recent investigations by Davidson and Teit show that this sugar is an exudation from the tips of the leaves of the Douglas fir, and is thus a purely vegetable honeydew. The sugar is not found on trees in the dense forests, but only on those in comparatively open areas, chiefly on gentle slopes facing east and north. It occurs on the leaves and branches in white masses ranging from one-fourth inch to two inches in diameter. The sugar-bearing trees are confined to dry sections, and the sugar is excreted only during hot summer droughts. Under the action of continuous sunlight a larger quantity of carbohydrates are formed during the day than can be carried away to the growing tissues; and the atmosphere being very dry, transpiration ceases and the leaves become gorged with water, which is forced out through their tips. By the evaporation of the water, the liquid is transformed into a white solid, which may again be disolved by rain, and recrystallize in patches at the base of the trees.

If these observations are correct, and they do not seem to admit of question, then we must admit the existence of a plant honeydew. The sweet liquid secreted by the glands on the stems and leaves of plants, as in the case of cotton and partridge pea, is as truly a nectar as the liquid produced within flowers, for in both instances the nectar is secreted by specialized cells known as nectaries. The organs of the flower are, indeed, only modified leaves. But the liquid found on the foliage of the Douglas fir, it will be noted, is forced out through the tips of the leaves, without undergoing any modification, and is thus a honeydew, not a nectar.

A beekeeper living in the Olympic National Forest, Oregon, 21 miles from Port Angeles, writes: "Four or five years ago my bees stored 150 pounds of fir sugar during a dry season. The following winter I lost many bees from dysentery, which I attribute to the effects of the sugar." This is very probable, as the composition of the fir honeydew is very different from floral honey. It contains, among other constituents, nearly 50 per cent of the rare trissaccharide, melezitose.

Do any other species of cone trees exude honey? If we admit it in the case of one species, it is not improbable that it may occur in other species. In the American Bee Journal for November, 1916, J. A. Heberle writes: "In Switzerland about 40 per cent of the honey crop is from honeydew, principally from the weisstanne (**Picea excelsa.** Synonym, **Pinus Abies**), a fir tree. From this fir tree the beekeepers in the Vosges Mountains, the black forest, and in parts of Switzerland, harvest large crops of honeydew, also called 'waldhonig.'" Heberle believes that this honeydew is of plant origin, since meteorological conditions seem to determine its production. When used as winter stores it produces diarrhea, and may cause a loss of 50 per cent of the bees. Whether the honeydew gathered from fir trees in Switzerland is of plant origin or not, it is impossible for the writer to determine positively, as no critical observations were made. But in the case of the Oregon fir the investigations of Professor Davidson and Mr. Teit appear to establish beyond question the existence of a plant honeydew.

Maine.

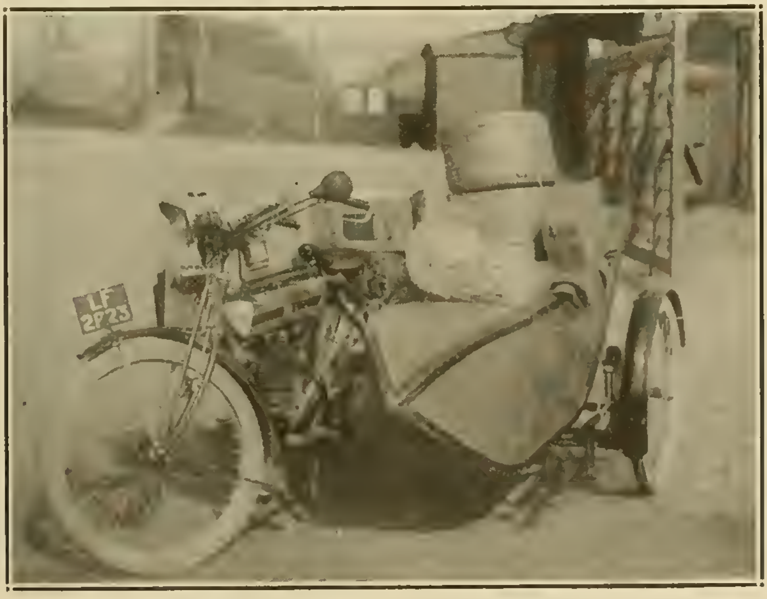
## THE AMERICAN HONEY PRODUCERS' LEAGUE

By Wesley Foster

There have been a number of articles in the bee magazines recently concerning the American Honey Producers' League, and considerable interest has been manifested by the beekepers in this organization.

One of the things that might be criticized in the League, as at present outlined, is that the entire honey trade, bee supply manufacturers and beekeepers are not included on equal membership. It will be impossible to build American beekeeping and honey production to the proportions desirable unless all of these elements can be united.

The very fact that bee supply manufacturers and honey dealers are eligible to associate membership only



Bee driver's outfit loaded on sidecar.

may arouse suspicion on the part of the honey dealer and supply manufacturer that he is not welcome, or is an interloper. The motive behind the movement to make it entirely a beekeepers' organization is the suspicion that some beekeepers have of honey dealers. Some think that their interests are not identical. The largest and most successful honey dealers and bee supply manufacturers are those who are most intimately connected with honey production. In fact, they develop into the handling of honey and the manufacturing of bee supplies for the reason that they were first successful beekeepers.

The movement will encounter opposition unless it is all-inclusive and unless the competitive elements can be united in co-operation. One of the unfortunate features of all beekeepers' organizations is that good speakers, intelligent men, but who are very distantly related to the beekeeping industry, join the associations, probably for the reason that they seek the opportunity to push ahead and think there is an opportunity for creating a position for themselves. They are doubtless attracted first to the beekeepers' organizations because they own a few colonies of bees and became interested in them in this way. They attend the beekeepers' conventions, have a good time, make friends, and the first thing you know they have been elected to some office and immediately propose a lot of new ideas which have been brought up every year during the last ten or twenty years, but eventually play out or are turned down by the beekeepers' organizations upon mature consideration.

I believe we would do well if in our beekeepers' organizations we would elect no one to an office who had not been a member of some beekeepers' organization for at least five years. It would be preferable if he had been a member of some organization for ten years. We would have more stability in our associations and would try to pull off less fool stunts than have been done in the past.

There is no doubt that the honey produced during the next twenty years is going to be very much larger in volume than has been produced during the last twenty years, and new means for distribution will undoubtedly need to be developed. However, we should bear in mind that we have new well-developed channels of trade that are valuable and have taken a great deal of time to develop and they should not be discarded until something better has been found.

The entering of beekeepers into actual marketing operations is going to increase, and the officers of these organizations should realize that the distributor is in the business as well as they and that he has to have pay for his services or he cannot continue in business. The beekeepers' organizations will, of course, have a steadying influence on the trade and wherever unfavorable conditions are developed or where any one dealer or bottler is taking an excessive profit they can stop this through proper means, and the marketing organizations of beekeepers will be strong enough to accomplish this. However, honey dealers are a distinct benefit to the beekeeping industry, and it would be very detrimental to the honey trade if they should cease their operations.

An unfortunate idea that seems to be quite prevalent in the beekeeper's mind is that the honey dealer is making an undue profit. If he could realize the conditions that confront the honey dealer and bottler, he would not feel as he does, but the idea is expressed at nearly every beekeepers' convention. The average beekeeper does not understand the difficulties, and his lack of understanding is the reason for his suspicion. If he knew more of the other fellow's business he would be much less likely to complain.

Boulder, Colo.

We believe an American organization requires a union of all who are interested in bees and honey and all that pertains to these. So we should hear from every side. Let it be borne in mind that the American Honey Producers' League does not propose to be a commercial honey-selling agency, leaving the question of sales to State and local organizations and dealers. It should be beneficial to all who keep bees or handle honey. Mr. Foster is both a beekeeper and a honey dealer, therefore doubly interested.—Editor.

## NEW TEXAS APICULTURIST

Lloyd R. Watson, who has been for some time past an assistant to Dr. E. F. Phillips at Washington, has taken up his duties in charge of the experimental apiaries at College Station, Texas. Mr. Watson takes up his work under favorable circumstances, as he is especially well equipped by training and experience for work of this kind.

Lloyd R. Watson, the new Texas Apiarist.

After graduating from Alfred University in 1905, he taught for a time, serving as principal of the high school of Alfred, New York. He then engaged extensively in beekeeping in Pennsylvania for three years, when he returned to Alfred University as professor of chemistry and beekeeping. In 1918 he became extension specialist in beekeeping and professor of apiculture in the Connecticut Agricultural College. From Connecticut he went to Washington, where he has since remained.

We look forward to much practical good to the beekeepers of the southwest as a result of the Texas experimental work. We believe that in Mr. Watson, Texas beekeepers have found a man who brings both scientific training and practical experience to bear upon their problems.

## SMOKING AND SMOKERS

By Arthur C. Miller

The last sixty years have brought many advances in bee culture and in appliances, the extractor, comb-foundation, excluders, escapes, etc., but above all, the smoker; and for this latter we are indebted to the Father of Commercial Beekeeping, Moses Quinby.

Think of taking a lot of black bees in box hives and handling them successfully and profitably year after year with only smoke from a pan of smouldering wood or smoke blown from a roll of rags, and those were all that Quinby had for years. Just try it some time with your modern Italians in frame hives with perfect combs. It is no pleasure, as you will soon discover. Oft does an inspector in an emergency have to resort to the roll of smouldering cloth and blow till his head reels. If he chances to be a user of tobacco, the pipe, cigar or cigaret does fairly well. I was relating this at a bee meeting recently when one charming young lady spoke up, "Yes, a cigaret does nicely in an emergency," and then, in a sudden panic added, "I borrowed one of fathers at times.' How fortunate to have a father who smokes. No, I won't tell who it was, and though Gates knows, he doesn't tell.

Quinby found tobacco more efficacious than rags or rotten wood, and he devised a little tin tube with a perforated wooden plug in each end for burning the tobacco, for he was not a smoker. The little tube was but 5 inches long and only a little over half an inch in diameter. One of the wooden plugs was flattened like a pipe stem and was held between the teeth and blown through as smoke was needed. Just think of handling a big yard of cross hybrids with no better device than that, and yet get along with it for years.

If you like diversion, make such a smoker and try handling your bees on the rapid fire system, brushing the bees from the extracting combs, etc. And that reminds me that a genial fellow, out west, at least far enough west from here to be safe, proposes to make bee brushes with bristles of white or pink or blue or gimlet color, because he thinks black bristles irritate the bees. I presume he will scent the brushes with lavender water and tie a dainty ribbon on the handle of the brush. I suppose he would be equally fussy when kicked over and over by a mule as to the color of the mule who elected to do the kicking.

To return to smokers. Quinby later affixed a small can to the nozzle of a common fire bellows. This was an advance, but necessitated the use of both hands, or to be operated by another person. Did you ever have a kindly novice try to "help" you by operating the smoker while you were at work? It's lots of fun—for the novice.

From the fire bellows tin can arrangement it was but a step to affixing a can directly to the side of the bellows, and about 1873 Quinby made a small bellows, much like those now in use, and affixed a very small can to one side, and behold, the bellows bee smoker was born. The can or tube was a tiny affair only about an inch in diameter and five or six inches long. A stick or pencil of rotten wood was cut to fit it, and after being ignited on one end was slipped into the tube, and was ready for use. Unless the bellows were frequently operated the fire would go out. Little by little it was changed, permanent draft arranged, firepot enlarged, and today we have a nearly perfect implement, the one indispensable implement of our craft. All praise to Moses Quinby.

Rhode Island

(On page 47 of the "Dadant System of Beekeeping" the author speaks of having been often dizzy from blowing smoke over the bees, before the invention of the bellows smoker.—Ed.)

## PEDDLING HONEY

By G. W. Leckenby

Mr. Foster, in January, speaks of peddlers being missionaries to introduce the honey to consumers. He has hit the right point to sell honey. I have been peddling honey in a town not far from him, with beans and vegetables, for nine years. The town has grown to a small city, and my trade has grown with it.

We only had a few stands of bees until two years ago, when my son decided to give up chickens and go to bees. The first year he produced about three tons of extracted honey. We peddled it and had it sold in November. I have bought a lot more and give half a day now and then. I am so impressed with the plan that one can do well even on a small profit that I am now making my plans to give all of my time this fall to peddling honey. I shall make my specialty of 5 and 10-pound pails. I found people were prejudiced against strained honey and granulated. I even found one of Mr. Foster's personal friends who had half of a 10-pound pail candied and felt he had been cheated, whereas he had been given something extra good. I took the pail and explained to him that he had the best of honey, and also how to bring it back to a liquid state.

The people must be shown why honey is a cheap food, a cheaper food than syrups, and even if it is more per pound.

Beekeepers are not producing, nor ever can, at a good fair price, one-half the honey people would use if they knew how good a food it is. I know, for I have customers who use ten pounds now who used one pound or none three years ago. As a writer in the December number says, the small package makes it cost too much and the customer is apt to gauge the price by it, never thinking a 10-pound pail costs only a trifle more than a gallon of Karo corn syrup.

I have always contended that a house to house peddling was the only system to sell honey. But a poor peddler hurts. There is only one consolation, he soon starves out. The beemen in one section could afford to keep a good man out all the time. Mr. Foster says there is lots of honey not sold. It is because you are trying to sell a jelly glass full instead of a 5 or 10-pound pail.

Colorado.

## G. H. CALE TO HAMILTON

G. H. Cale, formerly of the Maryland College of Agriculture, and more recently of the staff of Dr. E. F. Phillips in the U. S. Department of Agriculture, joined the force of Dadant & Sons on February 1. Mr. Cale will have charge of all work in the Dadant apiaries, now numbering about 800 colonies, and will be on the American Bee Journal staff as Experimental Apiarist. During the life time of the late Charles Dadant extensive experiments were carried on for many years. The younger generation of Dadants have long felt the need of more practical experiments in methods of commercial honey production on a large scale. An effort is being made to determine the actual cost of production of honey as well as the comparative value of different systems of management.

It is expected that Mr. Cale's thorough training along scientific lines, together with the many years of practical experience in honey production by members of the firm, will make possible some developments which will be of interest and value to beekeepers generally. The thing to be sought for especially will be the method which will produce the largest crops of honey with the least labor and the smallest cost.

G. H. Cale,

## EXPERIENCE ON REARING AND PURCHASING QUEENS

By Phillip Rudolph

In May, 1912, I sent to a Southern well-advertised golden queen breeder for 3 of his best golden breeders, for which I paid $15 each. I introduced them to fairly strong colonies. When the young bees made their appearance they were beautiful, bright goldens. I at once placed my order for 58 more. This time I ordered untested queens to be sent to me in August of the same year.

Everything went along fine. The goldens bred up fairly. When the honey flow opened, I was very anxious to see the work aside of my own bred queens. The goldens were slow to start for the fields, and my own bees started at least two hours earlier. About 5 o'clock in the afternoon you would scarcely see a golden start for the fields. My own bred bees, at that hour and later, were doing their best work. I watched these three colonies day after day during the honey flow. Their movements were slow, they would cluster on the outside of the hive. There was no reason for this, for they were well supplied with supers of drawn comb.

I commenced to feel cold toward the goldens. I discovered I had not the bees that were expected. These queens produced beautiful bees. It seems as though the queen breeders are losing sight of what we Wisconsin honey producers are looking for. We want bees that will fill the supers quickly. We don't care much for the fancy points of a bee; we want hustlers.

Last year I called on an old Milwaukee County beekeeper. He had 138 colonies in his yard, spring count. He had the best goldens I ever saw. We had a long talk on bees. I asked him how he liked the goldens as workers. His answer was this: "If I was a young man I would at once requeen back to the kind I always had. I haven't seen anything yet that would beat the three-banded Italians. I know I am short fifteen or more pounds per colony each year."

Let us see what fifteen pounds per colony would mean in dollars and cents: 138 times 15 would mean 2,070 pounds. At the present retail price of 30 cents per pound, 2,070 pounds equals $621.

I regretted that I had ordered these 58 queens. They came to me on time. I introduced them at once, not losing a single one, hoping they would turn out to be workers. But the following year, during the best of honey flow, I found that I had a bunch of loafers. I gave these goldens a fair chance, keeping them two seasons, but I was keeping them at a loss. I decided to come back to the old reliable three-banded Italians. I still had 21 colonies headed with my own bred Italians. I commenced to requeen back with my own reared queens. After making increases and requeening, I was still short 13 queens to clean up my yard of goldens. I sent for 13 more three-banded Italians, 12 from one breeder and one from a New York State queen breeder. These queens produced fairly good workers. The one queen bee which I got from the New York breeder proved to be the best. I did not trust this queen breeder when I sent for the one queen, he not being well advertised. I thought he did not know his business. You dont have to wait until the honey season is over to pick your best working colonies, as breeders. If you make a practice of going through your yard early each morning, when the honey flow is on, you will find a big difference in working colonies. You may find one or more whose bees are coming and going from the hive long before sunrise. You may say that these early returning bees were out all night. Well and good, for that shows that they started out late the evening before and were overtaken by darkness. That's my way of picking working colonies for breeders.

The following year the State of Wisconsin furnished me 5 queens.

I introduced them to 5 colonies that had failing queens, which did not breed up as they should. I gave them the best of care to get them in winter quarters in good conditions. These five colonies died during the winter. I decided there was something wrong. I could see that these brood-frames did not show up right, only thinking that it must be chilled or starved brood, I mailed a sample of this brood to Madison, and in three days' time I received my answer. It read as follows: "American foulbrood in its highest stages." I had made a mistake in introducing these queens in diseased colonies.

After finding I had American foulbrood in my apiary I decided not to purchase any more queens until I was cleaned up of that disease. This year again I bought three queens of a well advertised Indiana queen breeder. Placing my order rather late, I did not receive these queens early enough to breed up for the honey flow, so I am unable at this date to say whether these queens will produce workers or loafers.

Wisconsin.

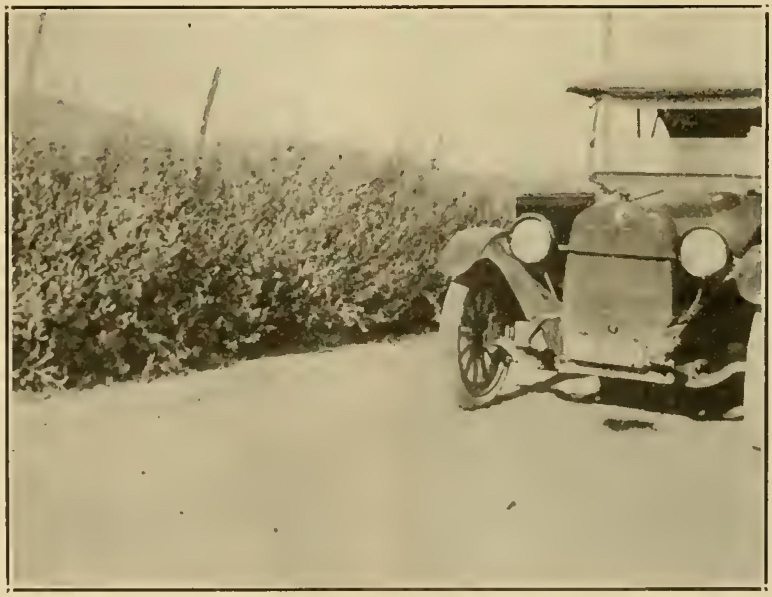
## BEEKEEPING IN THE STATE OF WASHINGTON

By H. A. Scullen

Beekeepers who have never visited one of our Western States can hardly appreciate the variety of conditions found in such a State as Washington. With a rainfall varying from 6 inches to nearly 200, and an elevation from sea level to perpetual snow, we have a honey flora of great variety.

From the standpoint of bee culture, however, we may divide the State into five distinct regions. They will be found to blend into each other, in most cases, but in general they present quite distinct flora and climatic conditions.

First in importance, from the standpoint of present production are the irrigated districts where sweet clover and alfalfa are the main honey plants. This so-called irrigated region would include portions of the following valleys: Yakima, Columbia, Methow, Okanogan and the district about Walla Walla. The acreage under the ditch is being added to from year to year and there is at present an irrigation project being considered which, if completed, would more than equal the present projects combined.



Sweet clover by a Washington roadside

Most irrigated sections are quite well occupied, but there are a few exceptions.

A second region might be represented by that portion of the State which is too arid for cultivation and as yet is not under irrigation. In general, it consists of all of the State east of the Cascade Mountains which is not included in the preceding or the two following regions.

The flora is largely sages and similar arid plants, most of which are of little value to the beekeeper. This region may, however, prove to be of more value than is expected when further investigated, since many species of plants found here are closely related to flora of considerable value in honey production in other sections of the West. The annual rainfall is as low as six inches in some portions of this region.

The third region is the extreme northwestern part of the State, where the annual rainfall increases to considerably over 20 inches, and with it the growth of timber increases. Here we find a variety of honey plants which under favorable conditions yield a surplus. Among these are fireweed (**Epilobium angustifolium**) white clover, snowberry (**Symphoricarpos**), dandelion and alfalfa. Due to less rainfall, fireweed is far less dependable than in the coast region.

There are very few commercial apiaries in this region, but there are some promising locations.

The fourth region includes the east and southeast counties of the State, where wheat raising is the leading industry. As would be expected, honey flora is not abundant in most localities. There are, however, a few small beekeepers who are doing well. White clover is the principal honey plant, but many native plants are of considerable value.

The fifth and largest region includes all that portion of the State lying west of the Cascade Mountains. Here we find the largest number of apiaries, the greatest variety of flora, the most disease, the largest number of box hives and neglected bees, the best market and the most failures. Fireweed (**Epilobium angustifolium L.**) is the leading honey plant, but white clover, alsike clover, Oregon maple, vine maple, Cascara, huckleberry and many others become important locally. The annual rainfall varies from 20 inches to nearly 200.

### Foulbrood in the State

American foulbrood is found in most localities in the Yakima Valley, about Walla Walla, Spokane and Colville. West of the Cascade Mountains it is found in nearly every county. No samples of European foulbrood were seen on the east side of the mountains, but it is very bad in many counties on the west side. It is doubtful whether there are any west side counties without at least some trace of European foulbrood. It is reported serious in British

Columbia west of the Cascades and has been identified by the writer at St. Maries, Idaho.

### The Spray Problem

The loss from poisoning of bees with orchard spray was apparently as serious as the loss from disease. Our estimate, based on a questionnaire sent to a large list of beekeepers in the fruit districts, places the loss at $50,000 for the summer of 1919. Many of the large honey producers in orchard districts are contemplating moving to other locations.

## THREE WEEKS AT BEE CONVENTIONS

By C. P. Dadant

Following the announcement on page 13 of the January number, I went to Wilmington, North Carolina, for the State meeting of January 11. Wilmington, close to the ocean shore, is a fine place, one of the old cities of the original 13 colonies, and a ship-building port, on Cape Fear River. When I reached the station from the train, I saw a smiling face looking at me. It was Mr. C. L. Sams, Extension Specialist in Beekeeping. We had never met, but he had seen my photo, and was looking for me.

The meeting was well attended, though it was held at the extreme southeast corner of the State. The Association has a live secretary, Mr. J. E. Eckert, who works without pay, with great enthusiasm. The weather was mild, which is perhaps not astonishing in a winter like the present one. Mr. W. W. King reported having seen bees carrying pollen on the 5th, probably from the soft maple or the alder.

The Carolinas are geologically divided into three quite distinct sections—the coastal plains, low and flat, with marshes and sandy lands; the piedmont regions or foothills; the mountain sections, covered mainly with timber. These differ slightly in vegetation, and consequently in the number and quality of the honey plants. But all are good for beekeeping. Cotton is grown everywhere, and in most places it yields some honey, especially from extra-floral nectaries. However, some of their best honey producers are the tulip-tree, which many call "tulip poplar" or even simply "poplar," and the sourwood, with gallberry, goldenrod, etc., in the low lands.

Traveling through the immense areas of sandy lands of the coastal plans, I was reminded of the "Landes" of southwestern France, south of Bordeaux, near the Gulf of Gascony, where wife and I visited some extensive honey producers in 1913; those lands produce very similar vegetation to these—pitch pine, scrub oaks. But they also produce heather, a splendid honey plant, which does not exist in the Carolinas. Could not the heather be acclimated in this country? If so, another very important resource would be added to those already known. Heather makes honey which is rather dark and strong in flavor, but of good quality otherwise. I spoke of it to several of our southern friends and propose to secure some seed for a trial. It grows wild, wherever the trees are not too thick, and needs no cultivation.

There must be some wild sections in North Carolina, for one of the members, Mr. W. P. Robinson, living at Belvidere, south of the Dismal Swamp, gave an account of the depredations of bears in his apiary.

A great deal of enthusiasm was shown towards increasing the membership and joining the League, but no action was taken in this respect. The officers elected were B. Anderson, of Terra Ceia, President; D. W. Monroe, of Chadbourne, Vice President, and J. E. Eckert as Secretary.

The very next evening I took the train for New Jersey, and arrived at Trenton the following day at noon. New Jersey beekeeping has several live wires: Dr. Headlee, the State Entomologist; Richard D. Barclay, the President of the Association, and Elmer G. Carr, Secretary, who is also Extension Specialist and Teacher. Mr. Carr is indefatigable.

A laughable incident occurred in my making the acquaintance of Dr. Headlee. I was very anxious to meet him, and at different times asked about him, when he was not present. After one of the sessions a large bald-headed man came to me to ask for addresses of reliable queen-breeders of Italy, as he said they intended to secure some, through an Italian entomologist, whose name I did not retain. I furnished him the addresses. A little later, talking with other beekeepers, I again said that I would like to meet Dr. Headlee. "Why, there he is. See that big bald-headed man? That's Dr. Headlee." The joke was on me, but I returned to him and grabbed his hand. He laughed heartily. But I'll not forget his face, after this.

The Beekeepers' Association of New Jersey is making an interesting experiment. There is, in Burlington County, a large plain, of some 25,000 acres, barren, sandy, where the vegetation of scrub pines and oaks is so short that a man can look over their tops. In this practical desert, surrounded by civilization, they have established an apiary for the fertilization of queens, bringing to it both breeding nuclei and colonies containing many choice drones. In this isolation they are bound to succeed in securing select matings. Seventeen queens were mated there the past year. The experiment is to be enlarged and imported stock is to be used. This is certainly very interesting.

E. G. Carr.

Leaving Trenton at 9 a. m. January 14, I reached Washington, D. C., in the afternoon and found our good friend, Dr. Phillips awaiting me at the station. We went directly to his home, some 15 miles from the city, in Maryland, where I had the pleasure of meeting his father and mother, who were about to leave for another visit farther south among their children. Mr. and Mrs. Phillips Sr., live in Ohio, near a very much traveled road, and I learned incidentally that he sells all his honey and several tons from others, to travelers that pass by in autos. All that is required is the sight of the apiary and a sufficiently conspicuous sign of "HONEY FOR SALE." Is this not another evidence that if people only believe that our honey is pure, there will be unlimited sale for it? Of course! What is sweeter than honey?

I was somewhat astonished at the young-looking appearance of both Mr. and Mrs. Phillips, Sr., having a son of apparently mature age, like Dr. Phillips. But why should I call them old? Mr. Phillips is only 3 months older than I, and I don't feel very old yet.

Dr. Phillips has a delightfully pleasant wife and 3 fine boys. I spent a very pleasant afternoon there.

I saw the office, laboratory and apiary, at Somerset, just about a block away from Dr. Phillips' home. That is where the studies are made of all the samples of bee diseases which come for examination from all parts of the country. That is also whence start the extension workers who urge the better management of bees, upon all bee owners. Much good has been done, by the study of diseases, and much is still done by diagnoses of the numerous cases of foulbrood and similar troubles. The study of wintering has gained a great deal by the researches made here. For all this, method, activity and punctuality are necessary. These qualities are evident in a visit to the laboratory. Nothing is neglected which may bring about a step forward. They are constantly on the lookout for good workers. But good workers are rare, in a specialty like this. I met several, in my trip, who are certainly well chosen. There, I met A. P. Sturtevant and G. H. Caie.

We spent the next day at the Capital. I had never yet been in Washington, although I have visited nearly every State. So one may know that my day was well filled. In fact, I was tired out before the day ended.

The next night, I again took a sleeping-car (seven times in all during my trip) and the next morning I was at Lynchburg, Va.

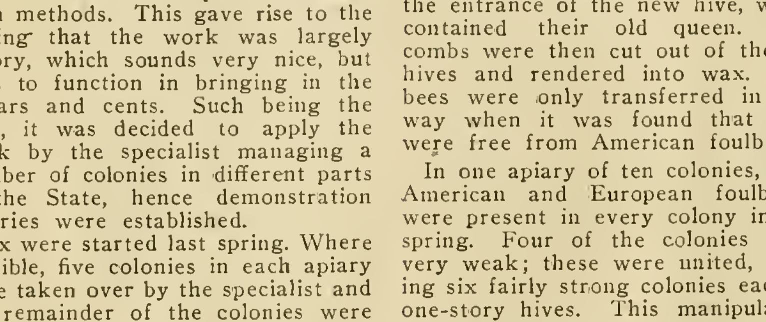
## DEMONSTRATION APIARIES IN IOWA

By E. W. Atkins

During the season of 1920 the Extension Department of the Iowa State College, in co-operation with the U. S. Department of Agriculture, outlined a project entitled "Increased Honey." The object of this project was not to necesarily increase honey production by making more beekeepers, but rather to incease the crop by making the apiaries which already existed more productive by better methods of beekeeping. The project called for a series of demonstration meetings in a county to be conducted in five visits throughout the year in order to discuss the subject in hand just previous to the time of its application in the apiary. In carrying out this work the underlying principles of bee behavior were emphasized rather than methods. This gave rise to the feeling that the work was largely theory, which sounds very nice, but fails to function in bringing in the dollars and cents. Such being the case, it was decided to apply the work by the specialist managing a number of colonies in different parts of the State, hence demonstration apiaries were established.

Six were started last spring. Where possible, five colonies in each apiary were taken over by the specialist and the remainder of the colonies were maintained by the owners for the purpose of comparing the results with those obtained by the specialist. These were called check colonies. The first thing done where the bees were not in modern hives was to purchase two-story 10-frame Langstroth hives and four shallow extracting supers for each colony. These were fitted up with full sheets of comb-foundation. On the second visit to the apiaries, which was made at the time the dandelions were coming into bloom, the queen was given plenty of room for egg-laying. To do this where 10-frame Langstroth hives are used it is necessary to give an extra hive-body, as the average queen is capable of laying sufficient eggs to have at least the equivalent of twelve Langstroth frames of brood by the beginning of the main honey flow. In some cases the bees were in immovable frame hives. In transferring them the principle of giving plenty of room was followed by placing a new 10-frame hive-body on top. As soon as the queen became established in the upper body the bees were drummed from the lower body, with the exception of enough to care for the brood. The lower body, with its bottom-board, was then placed just to the rear of its stand and the entrance was contracted. The upper hive-body was then given a bottom-board and placed on the old stand and the queen given all the room she required. Twenty-one days after this operation all the bees had emerged from their cells in the old hives. Each old, immovable frame hive was then drummed again by placing an empty box on top which the bees could run directly into. The bees from each hive were shaken out of the box at the entrance of the new hive, which contained their old queen. The combs were then cut out of the old hives and rendered into wax. The bees were only transferred in this way when it was found that they were free from American foulbrood.

In one apiary of ten colonies, both American and European foulbrood were present in every colony in the spring. Four of the colonies were very weak; these were united, leaving six fairly strong colonies each in one-story hives. This manipulation was the first step in the treatment of European foulbrood. At the beginning of the white clover flow the colonies were shaken for American foulbrood. If this disease had not been present the shaking treatment would have been omitted, as it was found that since the colonies had been strengthened, and with honey coming in, the European disease became less serious. Shaking necessarily weakens the colonies, as they are without daily emerging bees for at least three weeks. This is not a desirable condition for bees with European foulbrood, but the operation is absolutely necesary in the case of American.


Preparing demonstration colonies for winter.

Towards the end of the clover honey flow untested Italian queens were introduced to the colonies, this completing the treatment for European foulbrood. In this apiary all the colonies were treated for the disease, although only five were used in the demonstration group. This was necessary because none of the colonies would have survived the season had they not been treated, and those that were treated would have again been exposed to American foulbrood.

### Swarm Control

Three colonies in one of the other apiaries were treated for American foulbrood at the beginning of the clover honey flow. Also at that time all the other colonies were manipulated to control swarming. To do this the queen of each colony with one frame of brood was placed in the center of another hive-body containing nine frames of full sheets of foundation The remainder of the colony was stood to one side until the body containing the queen was placed on the bottom-board. A queen excluder was then placed over this hive-body and two shallow extracting supers given. The remainder of the colony was then placed above the supers. Queen-cells were, of course, started on the brood which was isolated from the queen. However, these were not destroyed, and in only one case from twenty-two colonies treated in this way did a swarm issue. This ocurred in the western part of the State, in an apiary where the twelve check colonies all swarmed. The reason for the colony swarming was that a swarm from one of the check colonies went into it and two days later came out, taking with it most of the bees from the demonstration colony.

The clover flow was exceptionally good in the western part of the State, where three of the demonstration apiaries were located. In the southeastern section the flow was only moderate, as it terminated rather suddenly. Absolutely no honey was obtained in the fall, with the exception of in one of the southeastern apiaries where most of the surplus was obtained from Spanish needle, and one of the western apiaries where a considerable quantity of honeydew honey was obtained. Before preparing any of the light honey produced by the demonstration colonies for sale, five combs, or approximately 25 pounds of honey were set aside for each demonstration colony. This quantity was in addition to that which the bees had in the hive-body occupied by the queen. The following table gives the amount of honey which can actually be sold from each apiary. The entire crop produced above the hive-body occupied by the queen in the check colonies is credited to their production:

| Location of Apiaries | No. of Demonstration Colonies | Total Production of Demonstration Colonies | Average Production Demonstration Colonies | No. of Check Colonies | Total Production of Check Colonies | Average Production per Colony |
|---|---|---|---|---|---|---|
| | | Lbs. | Lbs. | | Lbs. | Lbs. |
| Council Bluffs, Pottawattamie County | 5 | 1049 | 209 | 14 | 1174 | 84 |
| Malvern, Mills County | 5 | 500 | 166 | 1 | 28 | 28 |
| Fonda, Pocahontas County | 5 | 543 | 108 | 2 | 96 | 48 |
| Iowa City, Johnson County | 5 | 165 | 33 | 1 | 30 | 30 |
| Mt. Pleasant, Henry County | 5 | 300 | 60 | 5 | 250 | 50 |
| Milton, Van Buren County | 5 | 152 | 25 | 2 | 40 | 20 |

The larger yields obtained by the demonstration colonies were obtained chiefly on account of the queens having plenty of room for egg-laying previous to the honey flow and by keeping the working force contented during the honey flow by giving an abundance of room and sufficient ventilation during the honey flow.

It will be noticed that there is not the big contrast in the average production of the demonstration colonies and the check colonies in the last three counties given as there is in the first three. This can largely be explained by the fact that swarming was not nearly so intense in the localities showing the least contrast. In the excessive swarming location nearly every check colony swarmed at least once, whereas in the other section (eastern) but few of the colonies swarmed once. Swarming was, of course, partly controlled in this section by the American foulbrood treatment which some of the check colonies received.

While the results obtained are considerably in favor of the demonstration colonies, it is felt that next year they should be far more favorable, as both sets of colonies were on an even footing in the spring. Nothing was known of the age of the queens in the demonstration colonies.

The demonstration and check colonies were all wintered in the same way and all had about the same amount of honey in one hive-body only in the spring. This fall each demonstration colony was given a young Italian queen, provided with an abundance of honey, and given adequate protection from the cold. Having provided these conditions for the demonstration colonies only it will be interesting to compare the rapidity with which the two sets of colonies in each apiary build up in the spring.

## RED CLOVER AS A HONEY PLANT

By C. F. Bender

I have lately finished reading Mr. Frank C. Pellett's admirable work on "American Honey Plants." His estimates of the value of the different plants are very careful and accurate, as I am able to judge, having kept bees myself in three widely separated localities. To his article on red clover, I feel like adding my own bit of evidence. Up to 1913 I found it hard, as others apparently do, to believe that bees ever gathered honey from that source. I had watched carefully, in dry seasons and wet, and had only occasionally seen bees working on red clover, even though I had the famous long-tongued Italians. Sometimes they brought in pollen from red clover, but I could never be sure that they brought honey.

In 1913 our last good rain came on April 14. With only an occasional sprinkle, it kept getting dryer, until my last hope of even one pound of surplus honey had faded. Pasturage was burned brown, there were no weeds to produce fall honey, and the hives were empty of all but hungry bees. The weather was remarkably hot.

On July 6 I made a visit to one of the outyards, intending to provide more shade, and to see if any of the combs had melted down. I was astonished to find the bees working briskly, about half of them bringing in the characteristic red clover pollen. On opening some hives, I found that all were storing quite rapidly, some were working in supers.

As there were 80 acres of red clover just across the road, in full bloom, you may be sure that I visited that field. There could be no mistake, they were not getting honeydew, but honey from the blossoms.

On visiting my other outyard I found the same conditions, as they also had a fine field of red clover in easy reach. I made a hasty trip home to get supers, and had a busy time for the next two weeks, until the clover was cut for hay, when the flow stopped promptly. At my home yard there was no red clover in reach, and the bees were starving.

I want to mention what I think is important, that the clover in both fields was the mammoth red, or peavine. I think bees work on it oftener than on the common red clover.

The result of the two weeks' flow was 7,000 pounds of comb honey, and I am sure that it was red clover, pure and unmixed. The quality was good, a little more amber than white clover, with a little stronger flavor.

Having had this experience, I am sure that bees do store red clover honey rapidly at times, though very rarely. There are some things that I don't know yet. The following season was just as dry and we had the mammoth red clover in easy reach, but the bees did not work on it. The clover midge was very bad that year, and may have prevented the blossoms from secreting nectar.

Illinois.

Apiary two blocks from Broadway, in New York City.

## BEES IN NEW YORK CITY

Bees must be something of a novelty in the biggest city in the world. The picture shows the apiary of J. S. Morales, at Seaman Avenue and 207th Street, in New York City, only two blocks from Broadway. These colonies were built up from two-pound packages received in New York on April 20 and May 5. The bees were given drawn combs and fed syrup to the amount of two pounds to each package. Sufficient honey was gathered for winter beside some surplus. The hives are only 20 feet from the sidewalk, but no one passing was stung. The sources of honey are locust, sweet clover, goldenrod and aster.

## FINDING THE QUEENLESS HIVE

By Wm. Muth-Rathmussen

The scheme of W. H. Bacus, page 426, is quite ingenius, but one may not always have queen-cells on hand or be willing to sacrifice them. I have another way which is always available and sure. My hives are all numbered on front and back. On the side of each super is tacked a piece of section, on which I write the number of the hive when taking the super off. Previous numbers are struck out. If a queen is found in a super, I know by the number where she belongs and return her immediately to her own hive. I always keep a queen cage handy for this purpose when emptying supers. This may happen once or twice in a season; some years not at all. As a rule, the bees will not go through the bee-escape and leave the super, if the queen is there, but will show fight when the super is opened, and must be subdued with smoke. If I find many bees in a super, which has been standing in the honey house over night, I know that a queen is there, and I get my smoker and queen cage ready for use.

I have, however, had one exception to this. One Saturday I took off a number of supers and did not begin emptying them until the following Monday. There were no bees in any of the supers, but in one of them I found a queen sitting quietly and alone on the face of the comb. The bees had all left her over Sunday and gone out through the bee-escape over the window. She was returned to the hive bearing the number on the super tag.

Another advantage of those tags is that I can credit each colony with the number of sections it has finished during the season. Thus I find which are the best to breed from the following year.

California.

## LUMBER CONDITIONS IN THE UNITED STATES

I have before me copy of an address given by Mr. Edward Hines, the celebrated lumberman of Chicago, and who handles in the neighborhood of one billion feet of lumber yearly, as delivered before the Fifth Annual Convention of the National Association of Purchasing Agents at Chicago. Hines, in the course of his remarks, gave statistics on the amount of lumber available in this country, as follows:

| | |
|---|---|
| Fir | 762 billion feet |
| Yellow pine | 312 billion feet |
| Western pine | 246 billion feet |
| Redwood | 74 billion feet |
| Cedar | 62 billion feet |
| Hemlock | 37 billion feet |
| Hardwoods | 39 billion feet |
| Spruce | 35 billion feet |
| White pine | 28 billion feet |
| Cypress | 23 billion feet |
| Miscellaneous | 341 billion feet |

This shows that the amount of white pine and cypress available is very small as compared with the harder woods, which so far have been deemed unsuitable for use for beehives.

Mr. Hines gives figures to show that we use in this country from 35 to 45 billion feet of lumber yearly.

But he further states that the United States owns publicly about 200 million acres of forest lands and that if this amount was doubled the Government would own practically enough timber to supply the needs of the country in perpetuity.

Mr. Hines contends from his figures and from his experience that the price of lumber cannot drop materially, in fact, he says he expects to see lumber prices hold practically to where they are at present. Of course, his ideas should be shaded somewhat, but it remains to be seen whether or not his predictions are true. However, the figures given above as to lumber available and lumber used yearly are authentic and we believe will be of interest to our readers.

## SOME QUEEN EXPERIENCES

By Allen Latham

The past season has been unusually prolific in its yield of happenings in the queen-bee world of the unexpected and even abnormal. It is because these happenings interested the writer that he is now offering them to the readers of the American Bee Journal.

Twice during the summer of 1920 have I found while cutting out queen-cells, the occupant with its head to the base of the cell. One of the wonderful instincts of insect life is the ability of the caterpillar before entering the pupal stage to take its posture with head towards the end of the cocoon which has been prepared for the exit of the moth. So the queen-bee larva, after it has spun its imperfect cocoon, assumes a position in which the head is adjacent the external end of the cell. Why did the two larvæ mentioned above fail in this instinctive procedure? Does this offer only another example of the "survival of the fittest"?

Once this past summer I opened an artificially reared cell in which were two occupants. These two queen pupæ were not of the same age, one being about 3 days older than the other. I believe, as a rule, that when by mistake a queen-breeder puts two larvæ into a queen-cup the bees afterwards remove one of the two. That they do not always do so I have had occasion to verify upon two or three occasions.

The past summer has given stronger belief in the theory that queens have an antipathy for one another only for a brief period, or periods, of their lives. This antipathy is in evidence even before the queen emerges from the cell and lasts for several days, and in some instances much longer. Generally, however, it disappears as soon as the young queen becomes pregnant and heavy with eggs. After that it is only slightly in evidence, and is often so quiescent that a queen will not tear down unguarded cells. The following experience will illustrate my point:

Colony 34 was dequeened and prepared for cell-building by the removal of brood and the giving of cups. The cups were accepted and a fine lot of cells were developed and capped.

A day or so before the cells would normally be removed, the hive was opened to see how many cells would be available. A third or half of the cells were torn down, and a search revealed a queen nearly ready to lay. The cells were removed and also the queen, and a new set of cups were given, as the colony had a large force of good nurse bees. Upon opening the hive the following day to graft the cups given early that morning, the cups were found rather mutilated and evidence suggested a laying queen. The removal of the next comb showed a patch of some thousands of eggs freshly laid. Search revealed a beautiful young queen heavy with eggs.

It is difficult to explain with any certainty the presence of these two young queens in that colony, but there is every reason to believe that both were there at the same time and there with those queen-cells. Why had they not fought, and why had they not cut down every cell?

One day this past summer, while taking up queens from the mating nuclei, I found one in which the bees revealed restlessness. The queen was lightly balled, but unharmed, and I caged her with attendants. I gave another look into the hive and there was another loose ball of bees. In this was a second fine looking queen, which I also caged. Probably the explanation here is that one nucleus had recently swarmed out and that the queen had entered this other one. Up to that time the bees had not allowed the two to get into mortal combat.

It is my custom to cage the old queen when introducing a new one, and to set both queens side by side for two days or so. The old queen is then removed. Sometimes, in the hasty picking up of the old queen, she is injured, no special care being used. Even if killed she is put into the cage beside the caged new queen. Upon one occasion, in September, an old queen was so severely pinched in grabbing her from a mass of bees into which she was scurrying, that a portion of one of her ovaries was exuded; the exuded mass was about the size of a large radish seed. The queen was caged with the expectation that she would soon be dead. Two days later, as she appeared as lively as a cricket, she was given some escorts and plans were made to introduce her into a home colony to see whether she would ever prove useful again. I regret to state that she died about the tenth day. It seems remarkable that she could have lived even that long, and the fact that she did may help to explain why queens survive their trips through the mails as well as they do.

One day, while catching a queen, the wing which was grasped came off and the queen hustled along the comb apparently unharmed. This suggested a new way of clipping a queen. Grasp one large wing with thumb and finger of one hand and the other large wing with thumb and finger of the other hand. Give a quick jerk of the hands apart. One wing will be yanked off, the other is usually uninjured. I tried this with a number of queens, and so far as I observed no harm resulted. In one case a small drop of liquid appeared at the spot where the wing was attached to the body. I regret to state that I did not keep track of this particular queen and cannot say now whether she suffered permanent injury. I do not recommend this method of clipping with valuable breeding queens, but can recommend it for the run of queens, because of its ease of carrying out. One's tools for such a procedure are always to be found. Queen ants, soon after mating deliberately get rid of their wings.

During the height of the honey flow last summer I could not at once take care of several hundred virgin queens. It is my custom to give virgin queens, very soon after their emergence, to the mating nuclei, but for two weeks last summer I practiced caging them with attendants and giving them to nuclei as soon thereafter as possible. It was while caging some 70 virgins one day that I had a surprising thing happen. To cage the virgin I allowed her to lie in my closed fist and ran her into the cage, disliking to handle the wings of virgins. Suddenly a sharp sting was felt inside the hand which held the virgin. So sharp was the pain that I involuntarily slapped my quickly opened hand against my thigh. A virgin queen dropped in the process to the ground, but I could find no worker bee. I said to my son who was helping me, "I really think that I was stung by a queen-bee then."

A few days later, while caging another lot of virgins, the same thing happened. And again my quick involuntary movement prevented me from stating with absolute certainty that no worker was present, though none was seen as the queen fell to the ground.

In neither case was any sting left in the wound and the pain was identical with that of a worker sting. It was possibly a little more sharp at first, but it did not last long, and very quickly changed from the usual sensation into an itch. I was now positive that I had been twice stung by queen-bees, but I realized that my proof was not beyond doubt. The nursery cage might in each case have had a worker clinging to it unseen, and when I shook the queen into my hand this worker went in unseen by me.

Fortunately, I was privileged with a third trial. This happened a few days later as some 80 queens were being caged. This time I so far controlled my involuntary movement as to open my hand quickly; and there was the queen—alone— and **she was just in the act of withdrawing her sting from my skin.** I now knew beyond all doubt that I had been stung three separate times by virgin queens. I also knew that many others had tried to sting my hand, for I would have the itching sensation and also the smell of the royal poison on the palm of my hand. All three stings were inflicted upon the thin skin between the fingers, suggesting that the queen would more frequently sting but for the toughness of the skin of the human hand.

Connecticut.

## TOO MUCH HONEY

By John Protheroe

Nearly as startling a phrase as "too much money!" Can there be such a situation? Go, ask any queen-breeder at the height of a heavy honey flow. As long as it lasts, he grumbles and digs out his smothered cells from the sticky bars, and longs for that "Better Land," where there is a gentle, stimulative flow from dawn to dusk, from March till October; no dead intervals and no violent spates of nectar. A couple of days' gentle rainfall, then a hot sun on acres of sweet clover; these are conditions which make the honey producer chuckle, "Aha, my supers!" and the queen-breeder groan, "Oh, my cell-bars!"

Of the superlative wisdom of bees the world in general has long been convinced, though there are moments when the most experienced beekeepers have serious doubts and have been known to call them pesky little idiots. Several German writers, notably von Buttel-Reepen and Pastor Gerstung, would have us believe that they are reflex automata, blindly following the irresistible dictates of mass or community instinct. Elderly moralists of all denominations, on the other hand, delight in pointing out the wisdom and virtue of the busy bee, the prize Sunday-school scholar of the animal world. The next occasion on which you observe a band of crazed robbers desperately attempting to burgle a hive through the blind hand-cut, do not go for the kerosene jar, pause awhile and cogitate on individual volition, on free will, on responsibility and culpability, on the impelling force of instinct, on aberrations and conflicts within this force—and if the boss gets after you try and entangle him in the same train of speculation.

The subject is an avenue into the deepest profundities. Consider for a moment the ethical side of the matter. Should you allow yourself to give way to a feeling of anger towards an individual bee that has stung you? Where there is no responsibility there can be no culpability. To relax one's philosophic self-restraint may become not merely an illogical action but a lapse into the grossest injustice. To swat the dogoned little beast, who has sacrificed his sting and life in obedience to community instinct—how are we to describe such unmanly conduct?

Still, it is not always good policy for a practical beekeeper to cultivate philosophy; most of us are too much inclined that way by nature.

Let us, therefore, content ourselves with saying that there is all the appearance of foolish behavior on the part of apis mellifica in tending a bar of queen-cells with assiduous care only to bury them alive in a wall of honeycomb, thereby rivalling in horror the culmination of the opera "Aida." The bees indeed, do seem to have moments of doubt as to the outcome of this change of policy—they sometimes make an eleventh hour compromise, leaving the tip of the cell exposed, so that the hatching queen can just escape imminent burial. Very often they don't. Is this immuring of unfortunate virgins due to some obscure conflict between warring impulses in the mass mind of the colony, or is it due to a conscious change of policy brought about by changed conditions, as when a tentatively moist politician becomes bone dry?

W. J. Sheppard, Chief Inspector of Apiaries of British Columbia. The Province provides fully for extended inspection, with a corps of seven inspectors.

Leaving the philosophical side of it to beguile the chores of winter, let us examine it as a matter of practical difficulty. If the larvæ were all well fed up to the time of capping, then an incubator would offer a satisfactory solution to the problem. It need not be a very accurate or delicate machine. I have seen good queens hatch from cells discarded in an ordinary lumber-built shed, after three days and nights (in an Alabama. summer.) Unfortunately, the slackening of the supersedure impulse affects the feeding of the newly grafted larvæ, and a cure for this trouble is harder to find. Does it lie in weakening the cell-building colonies a little, in letting them simmer down, so to speak, below boiling point? This does not appeal to me as sound procedure. Will relief be found in giving them an intermediate super (forgive the nonsensical expression), in which they can store the honey? Theoretically, this is a beautiful idea; everything will work out perfectly. The field bees will devote their energies to this empty super, and the nurse bees, unimpeded, and stimulated by the general prosperity of the colony, will feed the queen-cells better than ever, for field bees never bother with larvæ, and nurse bees know nothing of comb building. Practice, however, works out differently; it is found that the cells are neglected; the will and the energies of the community as a whole have been diverted; the supersedure impulse has been superseded by the storing impulse. What happens it is difficult to say. The nurse bees either go afield sooner in obedience to "the will to store" or neglect their charges for some other function. The directing force, the spirit of the hive seems to become wavering and uncertain, and confused fluctuations occur in the beautifully balanced division of labor.

Doolittle was never tired of preaching the necessity of working with and never in opposition to these hive impulses. Skill lies in creating conditions that bring about desired impulses in a colony, and then working with them and turning them to account. This, of course, is the foundation of modern queen-rearing, in contrast with the crude methods of early experimenters, who imprisoned or removed the laying queen. It remains to be seen whether or not it is possible to create hive conditions that will cause the supersedure impulse to remain more powerful than the storing impulse during a heavy flow of nectar. Both have the same ultimate purpose, the continuously projected life of the community, that insistent, imperative that drives the bee to work or sting itself to death. Any sign of failure on the part of the queen has the more immediate effect on the well-being of the colony, and one would argue that an impulse founded on this condition must take priority; but bees become victims of a hoarding mania—for us a beneficent mania—creating the honey surplus far greater than their needs. During the height of a flow this collecting fury remains dominant. What is the puzzled breeder to do?

Let him locate in a neighborhood blessed with a steady succession of moderate flows, without too much of anything, not cursed with alternate feasts and famines, where there is always a taste of something to be had, where throughout July and August the hives do not "grow beards," as the French say. Let him experiment with incubation. Let him develop strains which show constancy in cell feeding. (Is it possible to breed in the marvelous cell-building qualities of Carniolans and breed out the swarming habit? Are these attributes complementary and inseparable?)

These are the best suggestions I can offer. What advice have others to give?

Rustburg, Va.

Our witty contributor has given us a problem indeed. But it is one of those that do not worry the beekeeper much, even when he tries to rear queens, for queens reared in such rare conditions are successful enough to make up for the little trouble of an extra storing of honey. —Editor.

## FIVE QUEENS IN ONE HIVE

In company with Mr. Frank Pillsbury, Secretary of the Monroe County Beekeepers Association, I was examining some very strong hives of bees in one of my yards and was very much surprised to find two queens apparently living in harmony.

As we further examined the hive we found three others apparently working and contented, and there were sixteen queen-cells which had not been torn or touched. Mr. Pillsbury, who is an old, experienced beekeeper, declares that he never before saw any such thing, and he does not understand it, and neither do I, nor any others whom we have made inquiry of, and there are some experienced beekeepers in this part of the country.

The five queens that are working in the hive, which is a Jumbo hive, are apparently contented and happy, and the hive is full of larvæ and brood. Did you ever hear of anything like this, or has any one of your acquaintances ever heard of a similar occurrence?

J. S. BRYAN.

Rochester, N. Y.

Answer.—Yes, we have heard of such happenings, but mainly in swarming time, and never in October or after the season was ended. A few of our leading beekeepers have held that several queens could be kept in one hive. But when all is said, the queens disappear, all but one, when the beekeeper thinks he has succeeded in this wonderful achievement.

I would venture the assertion that, before spring, all will have disappeared but one. However, we have seen an old queen and her daughter quite a while in the same hive, the old queen evidently being tolerated because she has lost her queenly disposition. As Huber writes: "Would you readily believe that an insect, a simple bee, be susceptible to jealousy? Yet you must accept this statement, for nothing is truer. . . ." Jealousy of each other causes queens to fight one another. In your case, by some unaccountable cause, those queens are not susceptible to jealousy. It is a freak.

We will be glad to have further statements from you after winter.—Editor.

## THEORY AND PRACTICE

Berlepsch wrote: "Learn theory, otherwise you will be bungling all your life." Indisputable is also the proposition: "Experience is the best teacher." Theory and experience must go hand in hand completely and correctly if perfection in anything is is to be attained. "The keeping of bees according to the principles of theory and experience" is, therefore, the title of the latest edition of the work written by the above genius. Only he who is well conversant and harnessed in theory and who can look back upon a long and extensive practice can make an honorable demand for the title of bee-master.—Dr. Dzierzon (Unedited letter translated from original manuscript by C. W. Aeppler.)

## DIFFERENT RACES OF BEES

"I do not know **Apis Indica** in India itself, where I understand there are two varieties, yellow in the plains and black in the hills; but I do know it well in Ceylon, where only the black variety is native, and where **A. Dorsata** and **A. Florea** are also found. It is quite black and about two-thirds the size of the German bee (common bees). Its drone-cells are exactly the same size as the German worker-cells and, so far as I remember, its worker-cells run rather less than 6 to the inch. My experience is that it is good-tempered and an energetic worker, but rather prone to the production of fertile workers.

**A. Florea** is about half its size (or rather less), black-brown, with very pronounced white stripes. It builds in the open, usually choosing the middle of a dense bush. It is fairly gentle, and I think its poison must be of a different composition from that of **A. Mellifica**, as it does not seem to act so quickly on the blood.

**A. Dorsata** is a handsome yellow bee about the size of a hornet, and is a perfect devil. I understand Mr. Benton handled it with comparative impunity; but my experience was that, even when clustered in a swarm, it is dangerous to approach. It builds a single comb, 5 or 6 feet in diameter from the branch of a tree, and migrates to follow the flowering of the "nillu" (a species of balsam), deserting its nest completely and frightening away large mammals, including the elephant."—H. Campbell in the June-September Bee World.

We do not think that either of these bees can ever be acclimated, in the United States, but the matter is interesting.

# THE EDITOR'S ANSWERS

Questions are answered in order received. As we receive more questions than we can answer in space available, two or three months sometimes elapse before answers appear.

### Queen Rearing

I am trying to go into the business of raising queens next spring. I was thinking of buying some good Italian queens direct from Italy, which I saw advertised in the bee papers. Would you advise me to start my business that way? Can you let me know of several good queen men, where I can get some good breeding stock? I have been in the bee business for 10 years, but for extracted honey only.

VIRGINIA.

Answer.—Since the world war, it has been very difficult to secure queens from Italy, owing to the slowness of the mail, both in this country and in Europe. We ourselves imported queens from the well-known Italian breeder, Enrico Penna, and have received but very few alive. On the other hand, if you wait until you receive queens from there to breed from them, you will find yourself delayed so that it will be next to impossible for you to rear any queens for sale the same summer. It is very necessary that the queens from which you breed should be tested for at least one summer in order to make sure of the honey-producing qualities of their workers.

So, if you decide to import, we would advise you to wait until the following year to try to rear queens for sale.

Otherwise there is no doubt that it is preferable, if possible, to breed from imported stock. Mr. Gaetaoo Piana, of Castel San Pietro, Bologna, is a very reliable breeder.

Situated as you are, I doubt whether you will find it as profitable to rear queens for sale as to produce extracted honey. The South is the most suitable section for queen-raising, because bees are produced there much earlier than in the North.

However, those matters can only be settled by actual trial.

### Increase

I am just a beginner. I want increase by the Alexander plan, but a little different: Queen killed in old hive and one frame given to new hive. Set new hive under and old hive upon queen-excluding board. Introduce a queen to each hive by cage method. After 4 or 5 days take down the old hive and set both side by side on old stand. After some days separate little by little each hive. Will it work or not? WASHINGTON.

Answer.—Yes, it will work; but a much more simple way would be to divide the colony in two and put a new queen in the queenless part. As bees are more likely to go where their old queen is, you must put the new queen and hive a little nearer than the other to the spot originally occupied by the old colony.

### Improving Pasture

What would you do for beekeeping, if you lived in a vicinity where the only resources for honey were flowers in August, with nothing between?

Answer.—In such a dilemma I can see but two things to do, either move the bees to better locations or get your farmers to plant alsike clover in place of red clover. If they try it they will be pleased with it. You might also secure the sowing of sweet clover in out-of-the-way places and in land that needs renovating. Nothing is better than sweet clover for this purpose, as its roots reach 2 feet or more in the soil. It is not a dangerous weed, for it is easily eradicated when you no longer need it.

### Italians

Please tell me if Italian queens of pure stock are ever marked with black on the abdomen, similar to the workers. I bought two colonies of pure Italian bees and tried to requeen my hybrid colonies. The two Italian queens were solid leather colored and the bees were all three-banded. The queens I raised were marked with black on the back like my hybrid queens and produced hybrid bees. Were these queens pure and all impurely mated, or do you think my bees were not pure Italians? There were no drones in my hybrid hives, and an abundance in the Italian hives. NORTH CAROLINA.

Answer.—Queens are very irregular in their markings, and I have seen very dark queens that looked like hybrids produce as fine bees as any. The only way to test this matter is to judge by the worker progeny of those queens. Nothing can be positively decided by the color of either queen or drones.

### Size of Hives

1. I am making a permanent brood-nest out of one 10-frame deep body and a standard extracting super. How does this compare in size with your large hives?

2. Will I have to rotate these shallow supers every year to keep candied honey out of the brood-nest?

3. Do you have trouble with candied honey in your large hives? I do not want to rotate supers, for the reason that I use only 8-frame in my extracting supers. I want to leave that super of honey there year after year. I know that more or less brood will be reared in it, but I expect some of the honey in the outside combs will remain there for years. OHIO.

Answers.—1. The story-and-a-half Langstroth 10-frame hive is a little larger than our Modified Dadant, so it would be large enough if the queen went readily up and down, especially down.

2. If you have candied honey every year in your supers and the bees do not remove it, it may be necessary to "rotate," as you call it; but if the bees will remove that candied honey when the super is put below, which I understand is what you mean by "rotating," they will surely remove it from the upper story when they are in need.

3. We have never had any trouble with honey candying and embarrassing the bees. But we do not believe it is due to large hives, only to climatic conditions. Your 8-frames in a 10-frame super ought to keep the queen out of it generally, for the cells of such combs are too deep for her to lay in. The workers have to cut them down for her use, and she must be very positively short of room for them to do this. Without the shallow super for brood the 10-frames hive is much smaller than the Modified Dadant hive.

### Melon Juice—Size of Hives

1. Does watermelon juice do any harm to old and young bees; also to brood in fall and winter?

2. I have introduced queens in three swarms of black bees. First I killed the old queen and smoked them good; then I let the young queen run in at the entrance. The queens are good layers now. Was this the right way to requeen them?

3. I have two swarms of bees and gave them full sheets of foundation in spring, wired the frames and extracted forty pounds of honey from each swarm, eighty pounds in all. The bees are in good condition now and are still working. They were well shaded from the sun. Was this a correct way to keep bees?

4. My bees are in eight and ten-frame standard, regular depth hives. Which is the best hive, eight or ten-frame? SOUTH DAKOTA.

Answers.—1. Watermelon juice has very little sweetness in it and would probably prove injurious for winter. But the bees rarely gather enough to make it a matter of consideration. If it could be reduced enough to make fairly sweet syrup, it might do for them to use in breeding in the summer and fall.

2. Smoke introduction is safe during the honey crop. We never succeeded with it at any other time.

3. Yes, shade is not injurious to bees, though some people think too much shade is objectionable.

4. Eight-frame hives are too small for good queens to develop their fertility. Even ten-frame hives are a little short for a good queen. Many people use two stories at the time of breeding. We prefer deeper frames and at least ten of them.

### Dark Honey—Uniting Swarms

1. A year ago last spring, I sent for a three-banded golden queen from California. The comb honey they have gathered is dark in color and the capping is much different in its makeup—much rougher than from my other Italians. This hive gave a swarm this summer; they, too, make the same kind. It surely must be sweet and white clover honey, as that is our main crop here. This honey is the same color the whole season through.

2. Can I treat honey with carbon bisulphide without hurting the honey for sale?

3. Would gunny sacks be all right to put next to the brood-frames, and then make a box that will extend down over each hive, half way or more, then chuck straw between hive and box, for outdoor wintering?

4. This summer I had three swarms come out about 15 minutes apart. The first one I hived, and the other two hived themselves in the same hive. A few days later three more swarms issued, a few minutes apart, and they all clustered in one bunch in an apple tree. Does this happen very often? IOWA.

Answers.—1. The bees have nothing to do with the color of the honey. However, some colonies may gather honey from some flowers farther away than others, and of a different kind. We have seen some colonies gather honeydew, while other colonies in the same apiary gathered white honey.

2. Yes. The carbon bisulphide will not injure the honey. It evaporates readily.

3. Yes; but it is best to shelter hives all the way down and even on the underside.

4. Yes; swarms are likely to unite when issuing, and the oldest writers on bees give directions on separating swarms when they have united. Usually, the best way is to find the queens and cage them, putting each queen in front of a separate hive, and trying to give each a portion of the swarms.

### Partly Filled Supers

1. Is it good to put the half-filled sections back on the supers next spring so the bees can fill them, or eat them out? I have about 65 of them.

2. I put 24 supers on the 12 hives; is that right?

Answers.—1. It is all right to put the sections back on the hive next spring so the bees can either fill them or use the honey. The only drawback is if the honey is not of the same quality as that which is already in the sections. In that case, it might be better to extract it in the fall and let the bees clean them, so the honey will all be of one grade.

2. Your colonies were probably not strong enough to fill two supers each. That is why so many sections were not filled. There are seasons when colonies will fill several supers and others when one super is even too much. It takes a great deal of experience to foresee such things, and even the best beekeepers make those mistakes.

### Bees on Roof

Please tell me what you think of keeping bees in an upper story or attic, two or three stories above ground, compared to the usual way on the ground. As bees seem to naturally choose a home high above ground in a tree or building, I see no reason why it will not prove successful. GEORGIA.

Answer.—No, there is no objection whatever to keeping bees in an attic, if you have room for them and can supply them with entrances, so they may fly back and forth without hindrance. Several large apiaries have been kept on top of buildings, in cities, and there are certainly many such yet. Mr. Chas. F. Muth, of Cincinnati, used to keep quite a large apiary on the top of his house, as he had a flat roof.

### Feeding for Winter

I began feeding about September 10 for outside wintering, bringing the average weight per hive to 75 pounds. But the weather was exceedingly warm for the season; frost, which generally appears September 12 to 15, held off until October 2. Upon re-weighing them I find a reduction of about 6 pounds, in one case even 12 pounds. There has been much brood-rearing, hives being full of bees. Should feeding have been postponed until cooler weather, or until first killing frost? WISCONSIN.

Answer.—Part of that loss is probably evaporation, part wax production and another part breeding. The condition which you describe is excellent and the bees should winter splendidly, with sufficient feed.

### Sowing Sweet Clover—Increase

1. I live adjoining the railroad right-of-way, and was thinking of sowing the right-of-way in sweet clover, any particular variety. When is the best time to sow it?

2. I noticed in your questions and answers in the Journal for September, page 312, you outline a plan for increase. Can one expect any surplus from a division like this? This boy's case fits mine. I am a farmer and my farm lies two and a half miles from where I live. My bees swarm too much for best results. I usually have two swarms per colony a season.

3. Why is it bees don't work on buckwheat after dinner. INDIANA.

Answers.—1. Sow the white sweet clover. Better sow it in the fall or early winter.

2. This answer, on page 312, was by Dr. Miller, one of the last answers he made. If there is enough of a crop, both the divisions might give a surplus. But this is always a doubtful matter. If you want as much honey as possible, better make no divisions.

3. Apparently the honey in the blossoms of buckwheat is produced only early in the day. We sometimes see the bees on it in the early afternoon, and conclude that there has been a little more honey produced than usual, on such days.

### Red Clover Bees

I would like to know something of the red clover bees, and where I may obtain them.

WEST VIRGINIA.

nswer.—The Italian bees work a little oftener upon the red clover bloom than the common bee, but none of them succeed in getting honey from it, except at irregular periods when the corolla is shorter probably owing to dry weather. The so-called red clover queens have not yet, so far as we know, produced bees that would work on red clover at all times. Every breeder keeps trying, but the goal is probably far yet.

### Spanish Needles

I am situated in close proximity to thousands of acres of meadow on marsh land, which is sometimes flooded in the fall by the waters of the Great South Bay, the meadows being submerged for the period of one or two tides only. Goldenrod, asters, heartsease and some wild carrot thrive on these meadows. I am wondering it Spanish needles would grow here, and if so, where seed could be purchased. Can you advise me regarding the probability, also as to the seed?

Brookhaven, L. I.

Answer.—We have no doubt that the golden-yellow Spanish needle of our marshes would thrive on land inundated with fresh water. Whether it could be made to thrive upon land flooded with brakish water, remains a question. We would gladly send you a few seeds during the winter, if you remind us of it.

The Spanish needle is a Bidens and there are other varieties of the Bidens that thrive on brackish soil. The *B. bidentoides* belongs to the shores of the Delaware River and the Bay. The *B. Eatoni* is found on the brackish shores of the lower Merrimac River, in Massachusetts. The *E. laevis* also belongs near the coast of the Atlantic. The same is said of the *B. trichosperma*. Whether these would be honey producers remains to be tested. Ours is the *Bidens aristosa*. The western bur-marigold (*Bidens involucrata*), (American Honey Plants, Pellett) is also a very good honey plant. Both grow on wet soil.

Perhaps some of our American Bee Journal readers will be willing to inform us concerning those seashore varieties of the Bidens, if they have ever taken notice of them.

## ODDS AND ENDS

### Dr. Miller's Memory

At the meeting of the Federazione Apistica Italiana, at Ancona, Italy, January 23, official mention was made of the death of Dr. Miller which had been already announced in the magazine published in that city, "L'Apicoltura Italiana." Resolutions of regret were passed to be forwarded to Mrs. Miller and to Dr. Miller's friends in this country.

### Idaho Bees

Idaho reports 35,900 colonies of bees in 1920, compared to 21,903 colonies in 1910. The honey crop for 1920 was 1,208,229 pounds, or a per colony production of 34 pounds.

### Inspection Work in Utah

We have before us the biennial report of Mr. F. B. Terriberry, State Inspector of Apiaries for Utah, for the period ending November 30, 1920.

The report, though short, strikes us as illustrating what can be done by efficient management, combined with active co-operation on the part of the good beekeepers of the State.

Under the foulbrood law, inspection is carried on by the county system, under the State Bee Inspector. Although the appropriation for inspection is only $6,000 and although the per diem pay of county inspectors is but $3.50, inspection was efficiently carried on in all counties but five, and some of these have very little beekeeping. Only one bee inspector resigned owing to the small pay.

There were 39,131 colonies of bees in Utah in 1920, or an increase of about 2,400 colonies over 1919. The total honey harvested was 3,002,245 pounds, or a per colony average of 76 pounds, of which it is estimated that 35 per cent is consumed within the State.

Both American and European foulbrood are to be found in Utah, but inspection, combined with education, is gradually overcoming these diseases. The State Inspector makes spring and fall trips over the State for a general survey of conditions.

The inspector of Salt Lake County reports that practically all the bees within 10 miles of the Murray smelter were either killed or badly damaged by fumes in September and October, 1920.

Mr. Terriberry and the beekeepers of Utah are both to be congratulated upon their efficiency.

### Census Reports

Washington shows 53,940 colonies of bees in 1920, as against 33,884 in 1910. The 1919 crop of honey was 1,502,843 pounds. West Virginia claims 89,873 colonies, as against 110,673 colonies in 1910, and the honey crop for 1919 was 919,689 pounds. Massachusetts has 6,573 colonies as compared to 7,464 in 1909. The honey crop for 1919 was 70,769 pounds.

### Poor Season

Last season was the poorest in this locality for many years, as far as honey crop is concerned. To some extent this was due to adverse weather conditions in time of the main honey flow. Many colonies had to be united and fed in the fall to keep them from starving in winter.

In this locality we have no climbing milkweed, but some of the adjacent counties are blessed with it and beekeepers extract honey by the thousands of pounds. A beekeeper with 100 colonies extracted 10,000 pounds of honey from this source in 1911. Because you say this weed is a serious pest to the farmer, I hesitate to introduce it.

Bro. Alphonse Veith.

Indiana.

### Extent of Bee Culture in Spain

It is calculated that Spain has approximately 1,600,000 beehives, nearly all of which are found in the Valencia, Aragon, Valladolid, Guadalajara and Majorca districts. The annual production of honey amounts to about 19,000,000 kilos (approximately 41,887,400 pounds), which at the price of 2.50 pesetas per kilo represents a value of 47,500,000 pesetas (1 peseta equals $0.198 at par value). To this figure there must be added the value of the beeswax. Under normal conditions some 60,000,000 pesetas worth of honey and wax are yearly produced in Spain.

—Commerce Reports.

### Increased Honey Production in Guatemala

"At the present rate of increase in number of hives," writes Vice Consul Goforth, "Guatemala will soon become an important producer of honey." Climatic and other conditions prevailing on the entire Pacific slope of that Republic very nearly approach the ideal for the successful operation of apiaries. Bees work throughout the year and, consequently, the production of honey per hive is very much greater than in the United States. Moreover, it is of excellent quality and flavor. During the calendar year 1919, honey to the value of $48,917 was exported from Guatemala to the United States. It is probable that this amount will be exceeded during the current year; in fact, present indications are that the figures for 1921 will show exports of honey exceeding $100,000 in value.

—Commerce Reports.

### Ten-Frame Hives

I make my 10-frame hives 14-⅞ inches wide on inside, that makes 32 4¼x4¼x1⅞ inch sections just fit; then on one side of the super I use screws to put it together instead of nails, so when taking the honey out of the super I just remove the one side that is screwed on and pry the ends out a trifle and in that way the sections are removed without any trouble.

In your Journal you say afterswarms are not desirable. I had one come off June 15 last year. I put them in an 8-frame hive. They made me 70 pounds surplus, which I sold for 30c per pound—$21. Not bad, do you think?

John W. Korb.

Kansas.

### Florida Bees

Preliminary report of the census for Florida gives the number of colonies in 1920 as 41,237, an increase of 7 per cent over 1910.

The production of honey was 962,488 pounds, or a per colony production of nearly 24 pounds.

### Rhode Island and Deleware Census Report

The 1920 census gives 2,976 colonies of bees, as compared with 6,910 colonies in 1910. The value is given as $11,819, or about $4 per colony.

Honey production is valued at $6,371 on 27,703 pounds, or an average of less than 10 pounds per colony.

To what is the rapid decrease in number of colonies due? Possibly foulbrood is rampant in Delaware.

Rhode Island reports 686 colonies of bees in 1919 (our friend Miller must have a majority of them), against 1,267 colonies in 1909. The amount of honey produced in 1919 was 6,488 pounds.

### Nuova, or the New Bee

"Nuova, or the New Bee," is the title of a new book written by Vernon Kellogg, well known entomological authority. It is a story book for children "from five to fifty," though possibly the subject matter would hardly suit those of so tender an age as five years. The book is well written and is brightened by several songs written by Charlotte Kellogg, besides fifteen fine colored engravings by Milo Winter. It contains 150 pages, is cloth bound, and retails for $2.25. Houghton, Mifflin & Co., of New York, are the publishers.

### "New" Ideas

A conical top, to direct smoke against the bees, was used by Columella, over a pan of burning wood. "New ideas" are not always so new.

Arthur C. Miller.

### Honey Exports

According to a recent report of the Secretary of Agriculture approximately 25 per cent of our farm products are exported. Certainly honey has not and is not keeping up its end in this volume.

We may be excellent honey producers, but we are as yet "infants" in the marketing of our product. If 25 per cent of all honey produced found foreign markets there would undoubtedly be no stagnation in honey prices at home.

### The League in Action

Beekeepers generally will be interested in knowing that the American Honey Producers' League, through its tariff committee, has filed a brief at Washington showing why a tariff should be enacted to protect the American markets from foreign honey. Mr. Colin P. Campbell, of Grand Rapids, Mich., is chairman of this committee, J. C. Henager of Salt Lake City, Utah, and Kennith Hawkins of Watertown, Wis., the other members.

The brief shows the number of colonies of bees and the annual production of honey in this country, together with some figures on the cost of production, and also information as to the amount of foreign honey imported into this country.

The League asks a minimum of 5 cents per pound duty on foreign honey.

The new National organization promises to secure results for the beekeepers on such a scale as has never before been attempted. Freight rates, tariffs, legislation, markets and every possible interest of the beeman will be watched constantly. Enough organizations have already joined the League to insure that it will succeed. As soon as there is time to show what can be accomplished, the rest will hurry to get into the band-wagon.

### The Kansas State Meeting

We were fortunate in having with us E. W. Atkins, J. F. Diemer, Carl F. Buck, A. V. Small, O. A. Keene and F. W. De Temple, Secretary of the

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We are better prepared than ever before to handle a large demand for both queens and bees by the pound. Let us send you one of our 1921 circulars and late price lists. We are now booking orders almost daily for next spring delivery. Let us book your order now, so as to assure prompt delivery when the bees or queens are wanted. Only a limited number of orders will be accepted for booking, as we are absolutely determined to take only as many orders as we can handle absolutely on time.

**M. C. BERRY & COMPANY, Hayneville, Ala., U. S. A.**

Western Beekeepers' Association, and they each gave of their experience in a manner that was very much appreciated by the people in attendance. Taken as a whole, our meeting was quite a decided success.

O. F. Whitney, Secretary.

### Texas Honey Producers

January 17, 18 and 19, the stockholders of the Texas Honey Producers' Association met at the headquarters in San Antonio. This was the largest meeting of the Association ever held. Many who have been members of the Association since its beginning visited the headquarters for the first time.

The financial report showed that even in these unsettled times, things were in fine shape. Because of the increased capital stock from $15,000 to $65,000, nine directors were selected Of the $65,000 only a very few shares are unsold.

The members voted to become affiliated with the American Honey Producers' League and to help in the advertising campaign of that body.

The following directors were elected:

W. C. Collier, Hillsboro (formerly Goliad), President.

W. O. Victor, Uvalde, Vice President.

Alma M. Haselbauer, San Antonio, Secretary.

Louis H. Scholl, New Braunfels.

Wm. Zimmerman, San Antonio.

Ambrose Johnson, Laredo.

R. A. McKee, Velasco.

E. G. LeStourgeon, San Antonio, Manager.

The annual meetings are always accompanied by social meetings, as this is conducive to the fraternal feeling of the Association. The annual Mexican supper was held at Casa del Rio with a large number present.

The last day was spent in inspecting the packing plant. The new blending tanks, with their attendant net-weight fillers and can pluggers, were in operation. This was the first visit of the members to the packing plant, and it was of such interest to them that the most of the day was spent there. On the final meeting a number of resolutions were adopted, among which is the following:

Whereas, The beekeeping world has lost through death its most beloved member,

Resolved, That the Texas Honey Producers' Association hereby expresses its debt of homage and gratitude to the memory of Dr. C. C. Miller, and sanctions the movement for the establishment of a Fellowship in Beekeeping in some one of our Agricultural Colleges as a fitting memorial to him, and requests that its members support the movement for the establishment of this memorial, and further

Resolved, That they commend the action of the beekeepers of America who inaugurated this movement and upon whose shoulders falls the burden of its establishment, and assure this committee that they have the support of the Texas Honey Producers' Association.

### Use of Honey

The Department of Agriculture of the Province of Quebec is issuing Bulletin No. 68 in both English and French, upon "The Use of Honey and of Maple Sugar in Cooking." It is a 16-page pamphlet which contains about 50 different recipes for making honey food preparations, drinks and candies, and a few similar directions for the use of maple sugar and syrup. The bulletin was prepared by Mrs. B. L. Vaillancourt.

### Heavy Loss Last Winter

The last year was a very good honey year. The fatality of 1920 will not be forgotten for a long time, 75 to 80 per cent would be placing the loss below the actual count. The colonies that were left did well during the season. Honey sold at 35 to 50 cents per pound; good markets in coal towns. I have been in the bee business over 50 years.

Alonzo Sides.

Pennsylvania.

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# CLASSIFIED DEPARTMENT.

Advertisements in this department will be inserted for 5 cents per word, with no discounts. No classified advertisements accepted for less than 35 cents. Count each initial or number as one word.

Copy for this department must reach us not later than the 20th of the month preceding date of issue. If intended for classified department it should be so stated when advertisement is sent.

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FOR SALE—White blossom sweet clover seed, pure and clean, can't be beaten for soiling, pasture, hay or ensilage. Grows well in any climate and thrives on run-down or depleted soils or waste land. Price $10 per bushel. Special prices on large quantities. New bags 65c each.
O. Honsberger, Rt. No. 1, Stouffville, Ontario.

BEST quality white sweet clover seed, raised on my farm in Nebraska, cleaned and scarified, at $12 per bushel. In less quantities 25c per pound. Frank C. Pellett, Hamilton, Ill.

FOR SALE—White sweet clover seed. By express, collect, 100 lbs., $15; 50 lbs. $8, and 25 lbs., $4.25. Smaller quantities by mail in not less than 5-lb. lots, for 20c a pound, delivered to buyer's address.
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HEAVY LAYING Italian queens that produce hustling 3-banded workers. Untested, $1.25; tested, $2. Safe delivery and satisfaction guaranteed. There is no disease in my apiaries. Order now and get them on time.
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Jess Dalton, Bordelonville, La.

MOTT'S NORTHERN BRED ITALIAN QUEENS—Select untested, $1.60; 6, $8.50; 12, $15. Select guaranteed pure, or replace, $1.75. Select tested, $2.50 each. Plans "How to Introduce Queens, and Increase," 25c. E. E. Mott, Glenwood, Mich.

FOR SALE—35 stands of bees. Ten hives are standard, 25 are sectional hives. All are 10-frame. 35 section supers; 25 extracting supers with drawn combs, all for $375, or best offer. Buyer to ship same. L. A. Schwab,
1340 Merchant St., St. Louis, Mo.

FOR SALE—Pure Italian queens and nuclei. One untested queen, $1.50; 12, $15. Tested queens, $2.50 each. Nuclei, 2-frame nucleus, $5; 3-frame, $6.50. Add price of queen wanted to price of nucleus. Frank Bornhoffer,
Rt. 17, Mt. Washington, Ohio.

BEES AND QUEENS from my Carolina apiaries, progeny of my famous Porto Rican pedigreed breeding stock.
Elton Warner, Asheville, N. C.

FOR SALE—Golden or 3-banded virgins, 60c each, or $6 per dozen; safe arrival.
R. O. Cox, Rt. 4, Luverne, Ala.

FOR SALE—Nuclei and queens. See our display advertisement.
Cotton Belt Apiaries, Roxton, Texas.

DAY-OLD ITALIAN QUEENS—High quality, low price, satisfied customers. Safe arrival guaranteed in U. S. and Canada. Safe introduction Prices: 1, 75c; 12, $7.20; 100, $60. Write for circular early.
James McKee, Riverside, Calif.

BEES BY THE POUND—Also pure-bred queens. Booking orders now for delivery after March 15. Everything guaranteed.
Brazos Valley Apiaries, Gause, Texas.

FOR SALE—June delivery, 1 untested queen, $1.50; 12, $14. One select, $1.75; 12, $17. One pound bees, $3.50; 2-lbs. $5.50.
I. F. Miller, Brookville, Pa., R. No 2.

BEES—2-pound packages, with queens from our best breeders, 3-band strain; 1 package and queen $5.50; 25 or more, $5.25 each. One-fourth cash books your order. Safe arrival guaranteed. Promptness and efficiency our motto. Caney Valley Apiaries,
J. D. Yancey, Mgr., Bay City, Texas.

GUARANTEED 3-band and golden queens. Booking orders now. Begin shipping March 15. Ask for 1921 circular, free.
Dr. White Bee Co., Box 71, Sandia, Texas.

FOR SALE—Black bees, 3 lbs. and queen for $6.25, parcel post prepaid. One-fourth down, balance just before shipping. Can ship beginning April 10.
Carl L. Wilson, Mount Vernon, Ga.

FOR SALE—Leather colored Italian queens, tested, until June 1, $2.50; after, $2. Untested, $1.25; 12, $13. Root's goods at Root's prices. A. W. Yates,
15 Chapman St., Hartford, Conn.

HARDY ITALIAN QUEENS, $1 each.
W. G. Lauver, Middletown, Pa.

MR. BEEKEEPER—If you enjoy preparing supers and removing honey, then you will be wise to head your colonies with my vigorous Italians. See larger ad elsewh
Herman McConnell, Robinson, Ill.

FOR SALE—Honey Brook Farm can supply you promptly, beginning April 10, with the very best three-banded Italian queens, one grade, select untested, $1.50 each, or $15 per dozen. Tested, $2 each, straight; ready April 1. Should you find some queenless colonies this spring, send me your order for a young queen to save them. I will not disappoint you. I have the bees and can deliver the goods. Pure mating, safe arrival, and satisfaction guaranteed.
Jasper Knight, Hayneville, Ala.

1921 PRICES on nuclei and queens: 1-frame nucleus, $3; 2-frame nucleus, $5; 3-frame nucleus, $6.50; without queens, f. o. b. Macon, Miss.; 5 per cent discount on lots of 25 or more. Untested queens $1.50 each, $15 per doz; tested queens $2 each, $22 per doz. No disease; inspection certificate with each shipment. Safe arrival and satisfaction guaranteed in U. S.. Queens sold only with nuclei.
Geo. A. Hummer & Sons, Prairie Point, Miss

GOLDEN and 3-banded Italian queens, tested, $1.25 each; untested, $1 each. Will begin shipping April 1.
C. B. Bankston, Buffalo, Texas.

PURE 3-BAND ITALIAN QUEENS—Order now for April and May delivery. Untested, $1.25; select untested, $1.50. Delivery, mating and quality guaranteed.
D. W. Howell, Shellman, Ga.

WE want to please you. Our reliable three-banded queens and bees will be ready May 1. All bees are shipped on a standard frame of brood and honey. 1-lb. package bees, no queen, $3.25; 2-lb, $4.50; 3-lb. $5.75. One frame nuclei, no queen, $2.75; 2-frame, $4. Queens, untested, $1.50 each. One-fourth down will book your order.
Oscar Mayeux, Box 15, Hamburg, La.

FOR SALE—Bees for strengthening purposes, 3-frame nuclei of hybrid or black bees on frames containing brood, at $5.25 f. o. b. Lyons, Ga. No queens included; none for sale. Will be able to start shipping April 20. No disease; safe arrival guaranteed if express agent notes loss on express tag. One-third cash with order. Book your orders at once, as number of nuclei for shipment will be limited.
Otto Diestel, Elza, Ga.

FOR SALE—Utopian quality Italian queens, the kind that satisfy. May 15 to June 10, untested, $2 each. After June 10, untested, $1.50 each, 6, $8. Virgins, 90c each; 6, $4.75.
Utopian Apiaries, Amboy, Minn.

THE ITALIAN QUEENS OF WINDMERE are superior three-banded stock. Untested, $1.50 each, six for $8; tested, $2.50 each; select tested, $3. Bees by the pound; write for prices. Prof. W. A. Matheny,
Ohio University, Athens, Ohio.

FOR SALE—Golden Italian queens, untested, $1.50 each, dozen $14. Bees by the pound a specialty. Write for prices on bees.
E. A. Simmons, Greenville, Ala.

FOR SALE—Queens and bees, Italians and goldens, $1.50 each, $16 per dozen; 1 lb. bees, $5, 2 lbs. bees, $9. If queen is wanted with bees add the price of queen. Safe arrival and satisfaction guaranteed in United States or Canada. Cash or certified check must accompany all orders where parties are not known or satisfactorily rated.
Graydon Bros., Rt. 4, Greenville Ala.

FOR SALE—Root's strain of golden and leather-colored Italian queens; bees by the pound and nuclei. Untested queens, $1.60 each; select untested, $2 each; tested, $2.50 each; select tested, $3 each. For larger lots write. Circular free. A. J. Pinard,
440 N. 6th St., San Jose, Calif.

NUCLEI FOR 1921—Now booking orders for 1921 delivery. Italian nuclei (with queen), $6.50 each. Hybrid bees, with pure Italian queen, $5.50 each. Terms, one-third down with order. No disease. Safe arrival and satisfaction guaranteed.
A. R. Irish, Doctortown, Ga.

I BUY BEES in colonies If you have one or more, write. Frank Coyle, Penfield, Ill.

FOR SALE—Will now book orders for our high-grade 3-banded Italian bees on wired Hoffman frames, for May and June delivery, beginning May 20. In 1920 we shipped 50 3-frame nuclei to a party in Montana without a single loss; no foulbrood. Our bees have been inspected by State Bee Inspector, in 1920. One full colony in 8-frame D. D. hive, with select tested queen, $17; one 3-frame nucleus, with select tested queen, $8; one 2-frame nucleus, with select tested queen, $7; one 2-lb. package bees, with untested queen, in June, $6.50; one 1-lb. package bees, with untested queen, in June, $4. Prices on queens given later. Terms, 10 per cent with order; balance first of month in which bees are to be shipped, or 5 per cent discount cash with order. Safe arrival guaranteed.
J. W. Bittenbender, Knoxville, Ia.

THREE-BAND BREEDERS from one of the heaviest honey-gathering strains in the State. $10 each. Delivery May 15.
A. V. Small, Augusta, Kans.

FOR SALE—Three-banded; Italian queens untested, $1.50 each; 6, $7.50; 12, $14. Select untested, $1.75 each; satisfaction guaranteed. W. T. Perdue & Sons,
R. No. 1, Fort Deposit, Ala.

WE are booking orders for our golden Italian queens for spring delivery after April 15. Untested queens, 1, $1.50; doz., $16; select untested queens, 1, $1.75; doz., $18; virgin queens, 1, 75c; doz., $9; tested queens, 1, $3; doz., $36 Safe arrival guaranteed.
Tillery Brothers, Georgiana, Ala.

FOR SALE—Large, hardy, prolific queens: 3-banded Italians and golden; pure mating and safe arrival guaranteed. We ship only queens that are top notchers in size, prolificness and color. Untested, $2 each; 6, for $11; 25 for $45; tested queens $3 each, 6 for $16.
Buckeye Bee Co., Box 448 Massillon, Ohio.

EDSON APIARIES now booking orders for queen bees for delivery during season of 1921. Prices: One untested queen, $1.25; 50 untested queens, $57.50; 100 untested queens, $100. Orders filled in rotation; first shipments March 1, 1921.
Edson Apiaries, Gridley, Calif.

BOOK YOUR ORDERS for QUEENS now—Goldens, $2; tested, $3; banded, $1.50; tested, $2.50; six or more, 10 per cent less.
Clover Leaf Apiaries, Wahoo, Neb.

WE are now booking orders for early spring delivery of two and three-frame nuclei, with untested or tested queens. Write for prices and terms. We also manufacture cypress hives and frames.
Sarasota Bee Co., Sarasota, Fla.

PURE ITALIAN QUEENS—Golden or leather colored, packages and nuclei; 1 untested queen, $1.50; 6, $7.50; 12, $13.50; 50, $55; 100, $100; virgins, 50c each; packages, 24 and under, $2.25 per pound; 25 and over, $2 per pound; nuclei, 1-frame, $4; 2-frame, $6; 3-frame, $7.50; queens extra. One-story 10-frame colony with queen, $12.
Golden Star Apiaries,
R. 3, Box 166, Chico, Calif.

BEES AND QUEENS from my New Jersey apiary J. H. M. Cook,
1Atf 84 Cortland St., New York City.

PACKAGE BEES AND PURE ITALIAN QUEENS—Booking orders now for spring delivery. Circular free. J. E. Wing,
166 Schiele Ave., San Jose, Calif.

HIGH GRADE ITALIAN QUEENS—Send for catalog.
Jay Smith, R. 3, Vincennes, Ind.

BEES BY THE POUND, ALSO QUEENS—Booking orders now. Free circular gives prices, etc. See larger ad elsewhere.
Nueces County Apiaries, Calallen, Texas,
E. B. Ault, Prop.

## HONEY AND BEESWAX

Lower Price. Top Quality. Atwater's Honey.

FOR SALE—White clover comb honey; also extracted in 10-lb. pails.
W. L. Ritter, Genoa, Ill.

FOR SALE—Choice clover extracted honey, $20 per case of two 60-lb. cans. Write for price for large quantities. Fifty cases No. 1 comb honey.
J. D. Beals, Oto, Iowa.

FOR SALE—Well ripened extracted clover honey, 20c per pound. Amber and buckwheat extracted 17c, in 60-lb cans. Five-pound pail clover $1.25. Buckwheat and amber $1 per pail. Light amber in barrels 12½c per pound; also have a dozen cases buckwheat comb at $5 and $6 per case of 24 sections.
H. G. Quirin, Bellevue, Ohio.

FOR SALE—Choice white clover extracted honey, $20 per case of 2 60-lb. cans, f. o. b. Holgate. Noah Bordner, Holgate, Ohio.

FOR SALE—Extra quality white sweet clover extracted honey in 60-lb. cans; candied, very white, $12.50 per can, 2 cans $24; new cases.
J. B. Sanderson, Fredericksburg, Ohio.

FOR SALE—Choice light amber honey in 60-lb. cans; also in 10 and 5-lb. pails. Please write for price and sample.
F. W. Luebeck, R. 2, Knox, Ind.

FOR SALE—Clover honey of the finest quality, very light in color, excellent body and flavor surpassed by none; 60-lb cans, two to the case, at $24 per case.
Longfellow Bros., Hollowell, Maine.

FOR SALE—Extracted honey. Write for prices. A. L. Kildow, Putnam, Ill.

FOR SALE—Honey. Immediate shipment f. o. b. New York, in 60-lb tins: Calif. white orange, 19c lb.; Calif. white sage, 16c lb.; white sweet clover, 14c lb.; Calif. L. A. sage, 13c lb.; West Indian L. A., 10c lb.; West Indian L. A., 10-lb. tins, 6 per case, 15c lb.
Hoffman & Hauck, Woodhaven, N. Y.

FOR SALE—Honey. A car load of white honey, about 70 cases of 60 lbs., 160 cases 10-lb. pails, 80 cases 5-lb. pails, 40 cases 2½-lb pails. Address
L. A. Coblentz, Rigby, Idaho.

FOR SALE—Finest Michigan raspberry, basswood and clover honey in 60-lb. cans, 20c per pound. Heartsease and aster, 18c. Free sample. W. A. Latshaw Co., Carlisle, Ind.

NEW HONEY. NEW PRICES—Supply your customers, finest alfalfa-clover honey, extra strong cases, $11.50 for one 60-lb. can, $21.60 case of 2, all f. o. b. here. Write for prices large lots. Two carloads sold; plenty on hand.
**E. F. Atwater, Box 37J, Meridian, Idaho.**

FOR SALE—9,000 lbs. of fine clover and basswood extracted honey, put up in new 60-lb. cans, 16c f. o. b. Grangeville,
C. E. Keister, Orangeville, Ill.

WANTED—White clover honey, comb and extracted, one case up.
Frank Coyle, Penfield, Ill.

FOR SALE—Extracted honey in 60-lb. cans, 2 cans in a box, white clover and basswood blend, per can $11.40. Light amber, fine, $10.80; amber $10.20. Sample 10c.
J. W. Bittenbender, Knoxville, Ia.

FOR SALE—Amber honey, 2 60-lb cans per case, 15c per pound; less in 10-case lots.
Arthur Kuerston, Shreveport, La., Gen. Del.

FOR SALE—Finest quality extracted honey in 60 lb. square cans 2 cans per case State how much you can use and I will quote you on same. Angus M. Paterson,
212 E. 5th St., Flint, Mich.

FOR SALE—Clover and buckwheat honey, either comb or extracted, at reduced prices; any style container. A postcard will bring our quotations. The Deroy Taylor Co.,
Wayne Co., Newark, N. Y.

WANTED—Comb and extracted honey.
The L. H. Snider Apiaries, Auburn, Ind.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendering. Fred W. Muth Co.,
204 Walnut St., Cincinnati, Ohio.

## SUPPLIES

Lower Price. Top Quality. Atwater's Honey.

FOR SALE—200 2lb. shipping cages. These are of the E. B. Ault make. Ault shipped me 200 packages last spring without a single loss. Will take $30 cash, or trade for 7 2-lb. packages of bees, shipped April 10.
C. E. Keister, Orangeville, Ill.

FOR SALE—Full line of new and second-hand Jumbo and Langstroth bee supplies at modest prices. Send for complete list.
The Hoffman Apiaries, Janesville, Minn.

FOR SALE—New and second-hand hives, frames, supers, covers, inner covers, bottoms, division-boards, hive-stands. Ask for particulars. F. D. Bowers, Sugar Grove, Pa.

FOR SALE—200 absolutely new 10-frame hives complete, consisting of hive-bodies, tops, bottoms, tin rabbets, nails and Hoffman self-spacing frames knocked down, in lots of 5, $14; 200 full-depth supers with frames, $1.20 each; 500 lbs. of medium brood-foundation at 78c per pound
A. Irish, Doctortown, Ga.

WANTED—To quote special prices on queen cages in quantity lots, to breeders. State quantity.
A. G. Woodman Co., Grand Rapids, Mich.

HOFFMAN FRAMES and cypress reversible bottom-boards, new, in flat. Money-saving prices. Elton Warner, Asheville, N. C.

SAVE MONEY on your sections, shipping cases, tin and glass honey containers, etc. Our free price list tells you how.
The Rattray-Hamilton Co., Almont, Mich.

WRITE FOR PRICES on my cypress beehives and supplies.
J. Tom White, Dublin, Ga.

FOR SALE—500 section holders, used but little, $3.25 per 100.
Edwin Collins, R. R. 1, Emporia, Kans.

FOR SALE—Several hundred used comb-honey supers for 1⅞ sections, 8 and 10-frame, good condition, no disease.
A. F. Lewis, Leroy, Minn.

HONEY EXTRACTORS at half price. Must vacate right soon. Send for particulars.
A. R. Seaman, S. Connellsville, Pa.

FOR SALE—100 cases new 60-lb cans in second-hand cases, packed two to the case. Cases are sound, but have been used once. $1.30 per case.
Dadant & Sons, Hamilton, Ill.

FOR SALE—Good second-hand double-deck comb honey shipping cases for 4¼x4¼x1⅞ sections, 25 cents per case, f. o. b. Cincinnati; terms cash with order.
C. H. W. Weber & Co.,
2146 Central Ave., Cincinnati, O.

FOR SALE—Good second-hand empty 60-lb. honey cans, two cans to the case, at 60c per case, f. o. b. Cincinnati. Terms cash with order. C. H. W. Weber & Co.,
2146 Central Ave., Cincinnati, O.

SEND us a list of goods wanted and will quote you lowest prices. We are the money-saving house. Price list free. Try us.
H. S. Duby & Son, St. Anne, Ill.

## WANTED

Lower Price. Top Quality. Atwater's Honey.

WANTED—One copy Alexander's writings on Practical Bee Culture.
Lynn Z. Silsbee, Dansville, N. Y.

WANTED—Beeswax; also old combs and cappings to render on shares.
F. J. Rettig, Wabash, Ind.

WANTED—Second-hand extractor.
E. L. Garrow, 209 E. Magnolia St.,
Lakeland, Fla.

WANTED—Beeswax. At present we pay 34c per pound in cash and 36c in trade for clean yellow average wax, delivered Denver.
The Colorado Honey Producers' Association,
Denver, Colo.

WANTED—Partner, beekeeper with $1,000; must be good, honest Catholic. Write for particulars Paul Jackson, Klaber, Wash.

WANTED—Bees in straight-combed Standard L-framed hives.
Amos Burhans, Waterloo, Iowa.

WANTED—200 or less colonies of bees for spring delivery. Any style hive or box. Remembering 10c honey is in sight for 1921.
A. W. Smith, Birmingham, Mich.

WANTED—A good honey location and bee outfit.
Delbert Lhommedieu, Colo, Iowa.

WANTED—Bees, with or without location.
F. W. Pease,
1717 Blake Boulevard, Cedar Rapids, Ia.

## THAGARD'S ITALIAN QUEENS

**BRED FOR QUALITY**

After years of breeding from some of the best three-banded stock imported from Italy, we have brightened the color and retained the good qualities of their mothers. I do not breed for quantity, but breed for quality. My queens have proven this to thousands of beekeepers who have tried them. They are hardy, prolific, gentle, disease-resisting and honey producers. Book your order early for spring delivery.

Untested, 1, $2; 6, $8; 12, $15.
Select untested, 1, $2.25; 6, $10; 12, $18.
Tested, 1, $3; 6, $16; 12, $28.
Select tested, 1, $5; 6, $25; 12, $50.

Safe arrival, pure mating, and perfect satisfaction guaranteed. Circular free.

**V. R. THAGARD, Greenville, Ala.**

WANTED—Beeswax, old combs and cappings for rendering on shares. Also wax accepted for trade. Top market prices offered.
A. I. Root Co., Council Bluffs, Iowa.

WANTED—Your order for "Superior" Foundation. Prompt shipments at right prices.
Superior Honey Co., Ogden, Utah.

## SITUATIONS

Lower Price. Top Quality. Atwater's Honey.

WANTED—Young men with some experience, to work with bees coming season. Modern equipment. Give experience, age, wages, reference. J. B. Merwin, Prattsvile, N. Y.

WANTED—Position by young man in apiary. One year's experience.
F. L. Schultz, 1445 7th St., Milwaukee, Wis.

WANTED—Position in apiary; 21 years old, understand beekeeping; prefer location in Iowa, Minnesota, Michigan or Illinois. State living conditions, etc., fully in first letter.
Harold Achtenhagen,
2433 Prairie St., Milwaukee, Wis.

WANTED — Situation by experienced beekeeper; shares or salary. Good references. State proposition in first letter.
N. B. Armstrong, 406 Center St., Ithaca, N. Y.

WANTED—Helper in beeyard. Give age, experience and wages wanted on basis of board furnished.
Mathilde Candler, Cassville, Wis.

WANTED—Experienced beeman; married man preferred. State in first letter experience and ability, age, nationality and wages wanted.
W. J. Stahmann, Clint, Texas.

WANTED—An experienced queen breeder for the season of 1921. Give age, reference and state wages demanded in first letter.
M. C. Berry & Co., Hayneville, Ala.

WANTED—One experienced man and students, clean habits, able-bodied and willing workers, as helpers with our more than 1,000 colonies. Opportunity to learn the business from A to Z; 1920 crop 122,000 pounds; theory also. Write immediately, giving age, height, weight, habits, former employment, experience, references, wages, photo, all in first letter.
E. F. Atwater, Meridian, Idaho.
(Former Special Field Agent in Beekeeping, U. S. Department of Agriculture).

WANTED—Position with good beeman, wages or shares. Ten years experience in all lines of beekeeping. Willett J. Cass,
1029 W. 7th Ave., Denver, Colo.

WANTED—Two young men, able-bodied, willing to work, clean in body and mind, who want to learn beekeeping and are willing to exchange faithful services for instruction from a man with almost forty years of extensive experience in beekeeping, board and some financial remuneration. Have twelve apiaries.
R. F. Holtermann, Brantford, Ont., Canada.

WANTED—Man with some experience to work with bees coming season. State age, experience and wages wanted, based on our furnishing board.
The Rocky Mountain Bee. Co.,
Box 1319, Billings, Mont.

WANTED—One experienced man, and students or helpers, in our large bee business; good chance to learn. Modern equipment and outfit, including auto truck; located near summer resorts. Write, giving age, height, weight, experience, reference and wages wanted.
W. A. Latshaw Co., Clarion, Mich.

WANTED—A live young man to help me during season of 1921.
Allen Latham, Norwichtown, Conn.

WANTED—Two comb-honey men for season of 1921. Give experience, age, and wages expected.
B. F. Smith, Jr., Fromberg, Mont.

WANTED—Will give experience and fair wage to active young man not afraid of work, for help in large, well-equipped set of apiaries for season starting April. State present occupation, weight, height, age and beekeeping experience, if any.
Morley Pettit, The Pettit Apiaries,
Georgetown, Ont.

## FOR SALE

Lower Price. Top Quality. Atwater's Honey.

FOR SALE or EXCHANGE—2 H. P. Bull's Eye engine equipped with Webster magneto, in first-class condition. First check for $30 takes it, or will exchange for bees in good hives; or what have you to trade? Also large calibre rifle for sale cheap.
F. J. Shotwell, Martelle, Iowa.

FOR SALE—At cut prices, 1⅞ section holders, flat. Plain sections, two sizes 8-frame empty bodies. Write.
Specialty Farm, Rockford. Minn.

FOR SALE—Owner wants use on one of our outside warehouses, so we must move this stock; slightly dusty and shopworn: 1-story 8-frame hives, packages of 5, $15. Also a few 10-frame, $17.50. Offer good only as long as this stock lasts.
A. G. Woodman Co., Grand Rapids. Mich.

FOR SALE—Twenty-acre farm with ginseng and seal bed; good land and location. Nice buildings, equipped with furnace, gas lights and water system. Modern bee cellar and honey house. Will sell, or rent with 200 colonies bees. L. Francisco, Dancy, Wis.

FOR SALE—Five hive-bodies, 10 Hoffman frames, $17; also 5 Danz hives.
S. Collyer, Black Mt., N. C.

FOR SALE—30 colonies of bees in 10-frame hives spaced 9 frames to the hive. Shipment to be made about June 1, after they are unpacked. Also write for prices on what you may want in bee supplies.
F. J. Rettig, Wabash, Ind.

FOR SALE—2½-acre cherry orchard, situated in a small town on the shore of Kootenay Lake, in the mountains of British Columbia. An ideal spot for a bee location. Price $6,000. Last season's fruit crop returned 25 per cent of the price asked.
J. W. Cockle, Kaslo, B. C.

FOR SALE—4,000 4¼x1⅝ plain sections, one-half of them split three sides for foundation; 500 4¼x1½ plain sections; 600 cleated separators to use with above, all Root Make; separators never used; $57 money order takes all, less than half present price.
E. F. Atwater, Meridian, Idaho.

FOR SALE—Brand new 6x10 Excelsior printing press, types, rules, $65 cash. Some bee supplies, magazines. Offer on magazines.
Edwin Dahlquist, North Branch, Minn.

FOR SALE—Fifty colonies of bees in old style Dadant double-walled hives in excellent condition; located in eastern Iowa. If interested, write. E. J. B., care American Bee Journal, Hamilton, Ill.

FOR SALE—"Superior" Foundation (Weed process). Quality and service unexcelled.
Superior Honey Co., Ogden, Utah.

FOR SALE—100 cases second-hand cans, packed two to the case, at 60c per case.
Dadant & Sons. Hamilton. Ill

FOR SALE—5 acres of fine land in good location. A honey house with cement floor, and 300 colonies of bees. Best location for bees in southwest Texas. Will sell by the first of April.
Chas. Heim & Sons, Three Rivers, Tex.

FOR SALE—150 colonies in ten-frame hives, with 2 shallow extracting supers, in good shape, $15 per colony.
A. A. Lyons, Ft. Collins, Colo.

FOR SALE—Cedar or pine dovetailed hives; also full line of supplies, including Dadant's foundation. Write for catalog.
A. E. Burdick. Sunnyside. Wash.

## MISCELLANEOUS

Lower Price. Top Quality. Atwater's Honey.

BLACK SIBERIAN HARES—Enormous sizes, delicious meat and beautiful fur. Write for information and prices.
Siberian Fur Farm, Hamilton, Canada.

FOR SALE—White Pekin duck eggs; good laying strain, $2.50 per setting of 12 eggs, postpaid.
J. B. Sanderson, Fredericksburg, Ohio.

IN answer to inquiries, I will send enough coreopsis seeds, the great fall swamp honey plant, to plant a plot in your flower garden, where you can raise your seed, with directions, for 50 cents. C. B. Shortlidge, M. D.,
Lima, Del. Co., Pa.

I will gladly send to my customers postage money for the return of my 2-pound bee-cages, sent them with bees the past two seasons. I need them. They are worth $1 apiece to me. Please notify me how many you have.
Jasper Knight, Hayneville, Ala.

WANTED—Information as to the whereabouts of my sister, Mrs. Emma or Wm. Lafferty. I last heard from her in Sioux County, Neb., from where the family moved to some point in Illinois. An estate awaits her or her children.
W. B. Wheelock, Greenville, Plumas Co., Cal.

THE DOMESTIC BEEKEEPER, becoming known as "the livest bee journal published," reaches every interest, contains good articles, timely information, all the news worth printing. Monthly, $1.60 per year. Sample copy free.
The Domestic Beekeeper, Lansing, Mich.

GRANULATED HONEY SLIPS—100, 20c.
Dr. Bonney, Buck Grove, Iowa.

DR. MILLER'S BEE SONGS are in "Songs of Beedom.' Ten songs for 20 cents, postpaid; 2-cent stamps taken. Also Teddy Bear souvenir postal cards, 10 for 10 cents. Address Geo. W. York, Box 84, Spokane, Wash.

WANTED—Old bee magazines. We have several customers who wish to complete their files of American ee Journal and other magazines relating to beekeeping. The early volumes are especially desired. State what you have and price wanted in first letter.
American Bee Journal. Hamilton. Ill.

GOLDEN ITALIAN QUEENS

| | May 1 to July 1. | | | July 1 to Nov. 1. | | |
|---|---|---|---|---|---|---|
| | 1 | 6 | 12 | 1 | 6 | 12 |
| Untested | $2.50 | $12.00 | $22.00 | $2.00 | 10.00 | $18.00 |
| Select Untested | 2.75 | 13.50 | 24.00 | 2.25 | 12.00 | 20.00 |
| Tested | 4.00 | 22.50 | 40.00 | 3.50 | 10.50 | 36.00 |
| Select Tested | 4.50 | 25.00 | 45.00 | 4.00 | 22.50 | 40.00 |

BREEDERS $12.50 TO $25.00

10 per cent additional for Exported Queens. Queens for Export will be carefully packed in long distance cages, but safe delivery is not guaranteed.

NO NUCLEI, FULL COLONIES OR POUND PACKAGES.

BEN G. DAVIS, Spring Hill, Tenn.

FREE

WE ARE OFFERING SOUTHERN TUBE ROSE BULBS AT SEVENTY-FIVE CENTS PER DOZ.

And with the purchase of every two dozen sale I will send you FREE ONE OF MY HAND PAINTED BULB OR FERN CONTAINERS

SCOTT, THE FLORIST, Birmingham, Alabama

## TENNESSEE-BRED QUEENS

Forty-nine Years' Eperience in Queen-Rearing
Breed Three-Band Italians Only

| | Nov. 1st to July 1st | | | Jnly 1st to Nov. 1st | | |
|---|---|---|---|---|---|---|
| | 1 | 6 | 12 | 1 | 6 | 12 |
| Untested Queens | $2.50 | $12.00 | $22.00 | $2.00 | $10.00 | $18.00 |
| Select Untested | 2.75 | 13.50 | 24.00 | 2.25 | 12.00 | 20.00 |
| Tested | 3.50 | 20.00 | 35.00 | 3.00 | 16.00 | 30.00 |
| Select Tested | 4.00 | 22.50 | 40.00 | 3.50 | 18.50 | 35.00 |

Select tested, for breeding $7.50

The very best queen tested for breeding $15

Capacity of yard 6000. I sell no bees by the pound or nuclei except with high priced tested and breeding queens

Queens for export will be carefully packed in long distance cages, but safe delivery is not guaranteed

**JOHN M. DAVIS, Spring Hill, Tenn.**

## FOR SALE

### IF YOU WANT THE CHEAPEST, BUY THE BEST

I am prepared to furnish for the season of 1921 twenty-five hundred two and three frame nuclei of my bright 3-banded Italian bees, headed with young, vigorous queens. These bees are free from disease, and safe arrival guaranteed. Hoffman frames wired and on full sheets of foundation; very few combs over two years old. I am booking orders now. One-fourth or one-half cash with order, balance before shipping.

Two-frame, $4.25; three-frame, $5.25. If queens are wanted, add $1.25 each.

After May 5th I will be ready to mail queens at the following prices: Untested, single $1.50, six for $8, twelve for $15. Tested, $2.50 each. Select tested, $3.50 each. Write for prices for large lots.

**A. B. MARCHANT, Jesup, Ga.**

Reference: Merchants and Farmers Bank of Jesup.

## ITALIAN QUEENS

BOOKING ORDERS NOW FOR 1921. QUEENS READY APRIL 1

My Italians are of an exceptionally vigorous and long-lived strain of bees. They are gentle, prolific, very resistant to foulbrood, and the best of honey gatherers. I have sold a good many queens to parties who are using them in stamping out foulbrood. Will book orders for one-fourth cash, and the balance just before delivery. Will guarantee safe arrival in the United States and Canada.

PRICES FOR APRIL, MAY AND JUNE

| | 1 | 6 | 12 | | 1 | 6 | 12 |
|---|---|---|---|---|---|---|---|
| Untested | $1.50 | $8.00 | $15.00 | Tested | $2.50 | $12.50 | $24.00 |
| Select untested | 1.75 | 9.00 | 16.00 | Select tested | $3.00 each | | |

No nuclei or pound packages of bees for sale.
Descriptive circular and price list free.

**JOHN G. MILLER** 723 C. ST., CORPUS CHRISTI, TEX.

## PAINT WITHOUT OIL

**Remarkable Discovery that Cuts Down the Cost of Paint 75%**

**A Free Trial Package is Mailed to Everyone Who Writes**

A. L. Rice, a prominent manufacturer of Adams, N. Y., discovered a process of making a new kind of paint without the use of oil. He named it Powdrpaint. It comes in the form of a dry powder, and all that is required is cold water to make a paint weather proof, fire proof, sanitary and durable for outside or inside painting. It is the cement principle applied to paint. It adheres to any surface, wood, stone or brick, spreads and looks like oil paint and costs about one-fourth as much.

Write to A. L. Rice, Inc., Manufacturers, 23 North St., Adams, N. Y., and a free trial package will be mailed to you, also color card and full information, showing you how you can save a good many dollars. Write today.

## Florida Queens and Bees

Two-frame nuclei with queen, $6 each. Tested queens, $2 each. Selected tested, $3 each.

This golden and three-band Italian stock I am offering has predominated and reproduced itself in the Sand Ridge section of Central Florida for 30 years.

DIXIE BEEKEEPER

A 32-page monthly publication now two years old, devoted to beekeeping and its possibilities, as well as the general interest of beekeepers here in Dixie, $1 per year. Sample free.

**WILDER'S CYPRESS HIVES** are durable and satisfactory. A full line of beekeeper's supplies at low prices.

Write for catalog.

**J. J. WILDER, Waycross, Ga.**

PAT JULY 30, 1918

## C.O.BRUNO NAILING DEVICE

*Made for the Huffman Brood Frames.* A combined Nailing, Wiring and Wedge Clamping Device. Has been tried and is guaranteed to do accurate work.

PRICE $7.50

Complete directions for operating are furnished with each device.

Manufactured by C. O. BRUNO
1413 South West Street, Rockford, Illinois

**SHE-SUITS-ME** queen-bees, prices for 1921: Untested Italians, $2 each; $1.75 each for 10 or more, prior to June 15. After June 15, 1 to 9 queens $1.50 each, 10 to 24 $1.40 each, 25 and up $1.25 each.

ALLEN LATHAM,
Norwichtown, Conn.

American Bee Journal 1 year, $1.50. Dixie Beekeeper 1 year $1. Both for $2.25
American Bee Journal 1 year, $1.50. Beekeeper's Item 1 year, $1. Both for $2.25.
American Bee Journal, Hamilton, Ill.

A NEW BEE BOOK
"Dadant's System of Beekeeping"
Price $1.00.

# BEE SUPPLIES

We are prepared to give you value for your money. Our factory is well equipped with the best machinery to manufacture the very A-best supplies that money can buy. Only the choicest material suitable for bee hives is used. Our workmanship is the very best. Get our prices and save money.

**Eggers Bee Supply Mfg. Co.**
Incorporated
ROUTE 1, EAU CLAIRE, WIS.

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DOWN IN COST

# TINS AND GLASS JARS

ORDER NOW FOR NEXT CROP PACKING

### 2 1-2-POUND CANS

| | |
|---|---|
| 2 dozen reshipping cases | $ 1.45 per case net |
| In 100-can crates | 6.50 per crate net |
| In 200-can crates | 11.00 per crate net |
| In 500-can crates | 24.50 per crate net |

### 5-POUND PAILS WITH HANDLES

| | |
|---|---|
| 1 dozen reshipping cases | $ 1.35 per case net |
| In crates of 100 | 8 30 per crate net |
| In crates of 200 | 16.25 per crate net |

### 10-POUND PAILS WITH HANDLES

| | |
|---|---|
| In one-half dozen cases | $ 1.10 per case net |
| In crates of 50 | 6.70 per crate net |
| In crates of 100 | 12.75 per crate net |
| 5-gallon tins, used, good condition, 2 to case | $0.50 per case |
| 5-gallon tins, new, 2 tins to wood case | 1.35 per case |

### White Flint Glass, with gold lacqd. wax-lined caps

| | |
|---|---|
| 8-oz. honey capacity cylinder style | $1.50 carton of 3 doz. |
| 15-oz. honey capacity, table jar style | 1.40 carton of 2 doz. |
| Quart or 3-pound honey capacity, Mason style | 1.00 carton of 1 doz. |

NOTE: LOW PRICES SUBJECT TO CHANGE AT ANY DATE

**HOFFMAN & HAUCK, Inc., Woodhaven, N. Y.**

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# HONEY PRODUCERS TAKE NOTICE

Do you realize that it is only a short time until your bees will be taken out of winter quarters? Have you thought about supplies for next season? Do not wait until swarming time for that means dollars out of your pocket. Order your supplies NOW.

We manufacture and carry in stock a complete line of bee supplies ready for prompt shipment. Send us a list of supplies you will need and we will be pleased to quote you our price. Our 1921 descriptive catalog and price list is now ready for mailing; send us your name and address and we will mail you our catalog.

**AUGUST LOTZ COMPANY, Boyd, Wisconsin**

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# PORTER BEE ESCAPE SAVES HONEY TIME MONEY

PORTER
BEE ESCAPE
PATENTED

For sale by all dealers.
If no dealer, write factory
R. & E. C. PORTER, MFRS.
Lewistown, Illinois, U. S. A.

(Please mention Am. Bee Journal when writing)

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# HONEY

If interested in either **extracted or comb** write for our prices before buying. **They** are right.

**C. C. CLEMONS CO.**
DEPT. A
KANSAS CITY, MO.

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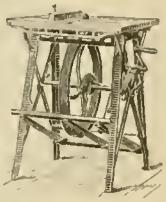
## BARNES' FOOTPOWER MACHINERY



Read what J. E. Parent, of Chariton, N. Y says: "We cut with one of your Combined Machines last winter 50 chaff hives with 7-in. cap, 100 honey-racks, 500 frames and a great deal of other work."

**W. F. & JOHN BARNES**
995 Ruby St., ROCKFORD, ILLINOIS

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## ELECTRIC IMBEDDER

Price without Batteries $1.50
Not postpaid.

Actually cements wires in the foundation. Will work with dry cells or with city current in connection with transformer. Best device of its kind on the market.

For sale by all bee supply dealers

**Dadant & Sons,** Manufacturers
HAMILTON, ILL.

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## BEE SUPPLIES

We carry a complete stock of supplies at all times, and can make prompt shipments. Our prices will interest you.

Send Us Your Inquiries
**A. H. RUSCH & SON CO.**
Reedsville, Wis.

# EARLY SPRING—BUY NOW

INDICATIONS point to an early spring. You'll want bee supplies on hand when the season starts.

Order now. Deliveries can then be made in plenty of time. For 40 years **"falcon"** bees and supplies have been giving satisfaction. Let them help you make this year the biggest and best ever.

*Write for our red catalog*

**W. T. FALCONER MFG. CO., Falconer, (near Jamestown) N. Y., U. S. A.**

*"Where the best bee-hives come from"*

# BEE SUPPLIES

## ROOT'S GOODS AT FACTORY PRICES WITH WEBER'S SERVICE

We carry several carloads of bee supplies, and are able to give prompt shipment at all times. Our motto is a customer must be satisfied. Give us a trial and we will show you how quickly we will answer your correspondence. Send your order and it will follow 24 hours after we receive it. Our new ca alog will be ready about January 15; send for same. We have thousands of satisfied customers, why not you? Send a list of your wants and we will quote you.

**C. H. W. WEBER & CO., 2163-65-67 Central Ave., Cincinnati, O.**

BOYER'S "QUALITY-FIRST"

# TIN HONEY and SYRUP CONTAINERS

are the best and cheapest in the long run
Prompt shipments of all standard sizes and styles

**CAN MANUFACTURERS SINCE 1892**
LARGE CAPACITY

If you cannot secure them from your usual supply house, write us your needs

BALTIMORE, MD. **W. W. BOYER CO., Inc.** 2327-2359 Boston St.

**BEEKEEPERS** WE MANUFACTURE DOVETAILED HIVES, HOFFMAN FRAMES, SECTIONS AND SHIPPING CASES

Our hives are made of best grade White Pine, cut accurate and smooth to standard measure Sections are made of Basswood polished on both sides. There are no better made.

We carry a complete line of everything used in the apiary. Our shipping facilities are as good as can be found anywhere. We want your business. We guarantee prompt and satisfactory service. Price list free.

**MARSHFIELD MANUFACTURING COMPANY, Marshfield, Wis.**

**BINDING FOR BEEKEEPERS**

We do all kinds of book binding, such as magazines like the "American Bee Journal," or any other publication. Also make any style blank book, either printed or unprinted heading.

**LUTZ & STAHL, Keokuk, Iowa**

# GOLDEN QUEENS 1921

Untested, $1.50 each, or 6 for $8. For 100 lots write for prices. I will begin shipping about April 20, and I guarantee safe arrival and reasonable satisfaction to everybody.

**R. O. COX, Rt. No. 4, Luverne, Ala.**

# STRAWBERRY PLANTS

Good, strong, well-rooted plants at $4 and $5 per Thousand. Also a complete list of the best red and black raspberries, hardy blackberries, fancy gooseberries and currants. A large stock of popular grape vines. Many of our customers are making from $500 to $1,200 per acre growing berries from our fruit plants. Send for our free catalog.

**BRIDGMAN NURSERY CO., Box 13, Bridgman, Mich**

# Crop and Market Report

Compiled by M. G. Dadant

### AMOUNT OF HONEY ON HAND

The amount of honey still remaining on hand varies greatly with different localities. Practically all small beekeepers report honey all disposed of, or only a small portion on hand, which can be sold before the new crop comes on. This is true from the Missouri River eastward except for some large producers in Pennsylvania, New York, and a few in Michigan, Wisconsin and Minnesota. Even some of these claim they will be able to dispose of their crop by extra effort, selling same at retail. There is, of course, some honey left in the southeast, but not a large quantity, probably 15 per cent of the total crop would catch it.

A few reporters in Iowa, Nebraska and Kansas still have some honey on hand.

Texas reports practically the entire crop disposed of, probably not 5 per cent remaining in the hands of the beekeepers. In the Inter-mountain territory and in the West Coast region is where most of the honey is still held. Colorado, Montana and Idaho still report some 20 to 40 per cent of the honey on hand, as does Washington and Oregon. The reports from these States vary, however, some beekeepers with large crops having disposed of the entire amount. Many of them are encouraged by the efforts they have made toward increasing local sales.

In California it is probable that at least 25 per cent of the honey still remains to be sold.

### HOW IS HONEY SELLING

Honey has been selling very slowly, both wholesale and retail, although in the last two or three weeks there has been an increased activity. Within the last few days sugar has advanced from one to three cents a pound, and this, of course, will have an influence upon the honey market, especially if the sugar prices continue to rise.

### RETAIL PRICES OF HONEY

The prices recommended and asked for honey are very similar over the entire United States, with an average of about $1.35 for a 5-pound pail and $2.50 for a 10-pound pail. The very lowest prices suggested were 85c for 5-pound and $1.60 for 10-pound, and the highest were $2 for a 5-pound pail and $3.75 for the 10-pound. One party reporting suggested that a 10-pound pail of honey should never sell at less than $2.50, and that it would be better to spend the extra 50c advertising than to make a sacrifice and sell at $2. No doubt he is right.

### SUMMARY

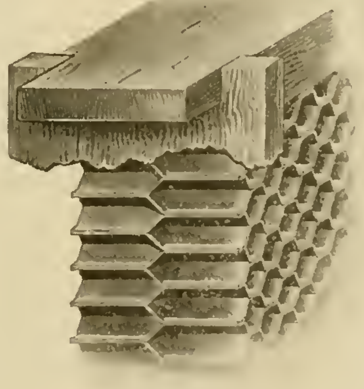
It does not seem in any way impossible that the present supply of honey should be disposed of before the new crop comes on. There is a tendency towards export of honey just now, and more has been exported within the last month than in any like period within the past few months. Sugar is on the advance and probably there will be added tariff put on sugar and on honey also. Very likely the large amounts of honey coming in from foreign countries to the Eastern markets have had a depressing influence upon our markets here. Cuban honey is now selling as low as 4c to 5c per pound in the New York markets. This being the case, buyers of honey will, of course, insist that prices on domestic honey be shaded, and we have heard from one source that some beekeepers in Arizona were offered as low as 5c per pound for amber honey. The usual prices at which car lots are selling are from 8c to 12c for amber honey and from 11c to 15c for the light grade.

Our idea would be that beekeepers should take advantage of a rising market to dispose of their honey. We are of the impression, and we hope, that such a rising market will develop within the next month to six weeks.

**AT LAST MR. BEEKEEPER**

**MAC DONALD ALUMINUM HONEYCOMBS** YOU MAY ORDER FROM 1 to 10,000

AND KNOW THAT YOU WILL RECEIVE THEM ON TIME



**The New Brood Rearing Aluminum Comb**

**55c f. o. b. Pasadena**

**Hoffman, 60c f. o. b. Pasadena**

**Langstroth, 60c f. o. b. Pasadena**

**Jumbo, 70c f. o. b. Pasadena**

**Shallow, 50c f. o. b. Pasadena**

*Prompt and Safe Delivery Guaranteed*

**DUFFY-DIEHL, Inc., 17-19 South Chester Street, Pasadena, Cal.**

# MARCH, APRIL, MAY

And the months hurry on to the beekeepers' harvest. You will want to be ready for it with a full line of Root supplies and enough Airco Foundation to see you through. Later, delays will be costly indeed. A single hour of idleness, in the days of honey flow, in ten colonies of bees counts up in dollars and cents.

# JUNE, JULY, AUGUST

Will be welcome and profitable months if you are thus prepared. Save money by ordering now. If we can be of any assistance to you, call on us. And clip the following coupon if any suggestions listed thereon are of interest to you. That's our job, and has been for fifty years—boosting beekeepers everywhere.

THE A. I. ROOT CO. OF IOWA, Council Bluffs, Iowa.

Gentlemen:

I agree with you, in that it isn't fair for you to do all the talking. Things are "Looking Up" for me in my Beekeeping, and I am preparing for an interesting and profitable season. For that reason, I am particularly interested in the following:

Plans for Spring Activity ____ Spring Feeding

____ Books that help make Beekeeping more Successful

____ Copy of "Gleanings in Bee Culture", the Beekeepers' Magazine

____ The New Process Foundation—AIRCO.

____ Your Latest Catalog.

I have ________ colonies in ________ frame hives

For your further information I wish to state

________________________________

Name ________________________________

Address ________________________________

## The A. I. Root Co. of Iowa

Council Bluffs. Iowa

## Seed Book FREE

Every year, for 34 years, thousands of people have adopted Olds' Catalog as their farm and garden guide. The carefully tested and selected seeds it offers have produced heavy field crops and successful gardens everywhere. Customers have long since learned that

**Olds' Catalog Tells the Truth**

Its descriptions, both in word and picture, are truthful in every respect. You can positively depend on garden, flower and field seeds, potatoes, plants and bulbs listed in this book being exactly as represented. All seeds conform to the strict Wisconsin seed laws. When you buy Olds' seeds, good yields are assured from the seed standpoint. You take no chances.

OLDS' CATALOG 1921
L. L. Olds Seed Co. Madison

**Write for This Book Tonight**

A postal will do. But don't delay. Start right with right seeds.

**L. L. OLDS SEED COMPANY**
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## TYPEWRITER SENSATION

**$4 or $5 a month WILL BUY**

A Standard, Guaranteed TYPEWRITER With Every Modern Writing Convenience

*Write Today For Illustrated Circular Explaining Try-Before-You-Buy Plan*

**SMITH TYPEWRITER SALES CO**
**(Harry A. Smith) 314—218 No. Wells St., Chicago, Ill.**

QUINN'S QUEENS OF QUALITY

Have no superiors—"There's a reason." Are Mendelian bred, good qualities accentuated. Gray Carniolans, Gray Caucasians, most gentle of all, prolific, hardy, vigorous, disease-resistant, white comb builders—they deliver the goods.

ITALIANS, 3-banded, line-bred, pedigreed; need no boosting; they speak for themselves.

CHAS. W. QUINN, Sabot, Va.

## PACKAGE BEES

Dependable Three-Band Queens. Prompt service. Prices right

**E. A. HARRIS, Albany, Ala.**

**STRAWBERRIES AND RASPBERRIES**

this summer, if you set our Everbearers. Raise your own small fruits; easier than garden truck. Ever hear of Gibson, that large new strawberry that yields over 7,000 quarts per acre under ordinary weather conditions? If you have one square rod in back yard plant Everbearing strawberries. The coming season means big money for berry growers. On trial grounds our stock is proven before we sell. Our plants are the kind that grow, heavy yielders and true to name. Let us send you free catalog now of wonderfully reduced prices. Currants, grapes, etc.

**Fry Bros. Co., West Lafayette, Ind.**

### South Dakota Meeting

The South Dakota beekeepers will hold their annual convention at Vermillion on March 8 and 9. A good program is promised.

### Early Sweet Clover

Shreveport, La., Jan. 22, 1921.

Enclosed you will find a sprig of sweet clover in bloom. How is that for early blooming, when you are probably sitting close to the stove to keep warm? We also saw a bee working on a white clover blossom yesterday. But I do not want you to think this is general. Only here and there we can find them.

The sweet clover was sown by Mr. Pease 3 years ago and is quite a stand now. Am sending you this, thinking it might interest you because it is so early. Arthur Kuersten.

### Bees Busy Early Down South

Just a line from the Sunny South. The bees are humming just like it was June (January 28). We have a little yellow flower in bloom and the maples are budding.

The bees are loaded with pollen and bringing in some honey.

The queens have begun to lay in spots.

Don't know where the bees are finding honey unless it's violets or the little wild yellow flowers in the fields. Can't find any other source.

J. W. Sprott.

Mississippi.

### West Virginia Meeting

The annual meeting of the West Virginia Beekeepers' Association will be held at Charleston, W. Va., March 25 and 26.

### Co-operative Effort

The Iowa Beekeepers' Association is undertaking to buy supplies for its members this season. The first estimate amounts to about $9,000. It is possible to secure much better prices on this quantity of goods than individual beekeepers could get in small lots. Secretary Paddock is handling this extra work without charge to the members. This Association certainly gives big returns for its membership fee.

## TOO LATE TO CLASSIFY

GOOD STOCK, plus long experience in shipping bees make it profitable to buy package bees or nuclei. Write for my new circular.
R. V. Stearns, Brady, Texas.

FOR SALE—500 lbs. of Dadant medium brood foundation at $75 per hundred. In not less than 50-lb. lots.
M. C. Berry & Co., Hayneville, Ala.

FOR SALE—Incubators, one-fourth price; exchange for extractor, double gun, repeater.
Lorenzo Clarke, Winona, Minn.

FOR SALE—60 colonies of Italian bees, enough extra supers and supplies to run an apiary of 150 colonies, for extracting honey. The outfit is worth $1,600; will sell for $800. A good honey location. Buy soon so that you can prepare for the spring crop. No bee disease.
P. J. Thullen,
327 Walker St., Huntsville, Ala.

QUALITY QUEENS AT QUANTITY PRICES Breed Three-Band Italians only

PRICES FOR 1921

| | Nov. 1 to June 30. | | | July 1 to Nov. 1. | | |
|---|---|---|---|---|---|---|
| | 1 | 6 | 12 | 1 | 6 | 12 |
| Untested | $2.00 | $ 9.75 | $18.00 | $1.50 | $8.00 | $15.00 |
| Select Untested | 2.25 | 11.25 | 19.80 | 1.75 | 9.75 | 16.80 |
| Select Tested | 3 50 each | | | 3.00 each | | |

Breeding queens after June 15, with 2-frame nuclei, $15.00 each.

Queens are reared from mothers whose colonies are GENTLE, HARDY, and as HONEY GATHERERS will compare with any. Each and every queen reared by the latest and most approved methods, thus insuring queens that are capable of duplicating the excellent characteristics of their mothers.

I rear all my queens personally, and strive for QUALITY instead of quantity. You may rest assured that when you order queens of us you are getting among the best that can be produced. You take absolutely no risk in getting our queens for SATISFACTION and safe arrival guaranteed in the United States and Canada. Foreign shipments at receiver's risk. I sell no bees by the pound, nor nuclei, only with breeding queens. Try and estimate your needs for the approaching season and place your order early.

HERMAN McCONNELL, Robinson, Illinois

HONEY CANS

Let us figure with you on your requirements of Honey Cans.
We ship any quantity desired.

WRITE FOR PRICE LIST

ADDRESS

THE UNITED STATES CAN CO., Cincinnati, Ohio
VIRGINIA CAN COMPANY, Roanoke, Va.
BOX 577-D

QUEENS, Select Three-Banded

Write for descriptive circular of our Select Italian Queens. Pure mating, safe arrival and satisfaction guaranteed

| | May 1 to June 15 | | | June 15 to Nov. 1 | | |
|---|---|---|---|---|---|---|
| | 1 | 6 | 12 | 1 | 5 | 12 |
| Untested | $2.00 | $10.00 | $18.00 | $1.50 | $ 9.00 | $15 00 |
| Select Uotested | 2.50 | 12.00 | 20.00 | 2.00 | 10.00 | 18.00 |
| Tested | 3.50 | 19.50 | 36.00 | 3.00 | 16.00 | 30.00 |
| Select Tested | 4.00 | 22.50 | 40.00 | 3 50 | 19 50 | 36.00 |

HARDIN S. FOSTER, Columbia, Tenn.

EAGLE "MIKADO" PENCIL No. 174

174 EAGLE MIKADO No2 EAGLE

Regular Length, 7 inches

For Sale at your Dealer. Made in five grades

Conceded to be the Finest Pencil made for general use.

EAGLE PENCIL COMPANY, NEW YORK

# NOW IS THE TIME

When the market is slow is the time to push local sales by means of well-placed advertising. Our line of honey labels is the finest in the market. If you have not yet received a copy of our catalog send for one today.

**CALENDARS, PLACARDS**

We are prepared to furnish the queenbee in color, like the one on January's cover, either as a placard or a calendar. These are printed on white enameled cardboard, 7x11 inches in size. Price with your advertisement printed thereon, $2 per dozen, or $11 per hundred, postpaid.

We also have the Children's Doll Party, little girls eating honey, on similar cardboard, 9x11 inches, in either calendars or placards, at $2 per dozen or $11 per hundred. Make your advertisement briet, as it can be read more readily without too much printing.

**AMERICAN BEE JOURNAL, Hamilton, Illinois**

ANOTHER NEW BOOK

# BEEKEEPING IN THE SOUTH

BY KENNITH HAWKINS

There is a general demand for a book giving detailed information relating to beekeeping conditions in the South. Kennith Hawkins, as a beekeeping specialist for the United States Department of Agriculture, visited all the Southern States and has made a special study of the characteristics of this region. This is not a text book of beekeeping, but rather a book of information about a great region where beekeeping offers exceptional possibilities and where there is a great variation of the climate and flora of different sections. Illustrated with many photographs. Mailing weight one pound.

**PRICE $1.25**

**AMERICAN BEE JOURNAL, Hamilton, Illinois**

THIS IS THE CYPRESS "MARK OF DISTINCTION"

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No. of Mill
TRADE MARK REG. U.S. PAT. OFFICE

IT'S STAMPED ON EVERY PIECE OF "TIDEWATER" CYPRESS

"ALL
HEART
FOR
BEE-
KEEPERS'
USE
(Of Course)

THE MAN WHO BUYS CYPRESS MINUS THE ARROW TRADE-MARK AND THINKS HE IS GETTING

"TIDEWATER" CYPRESS

*"The Wood Eternal"*

IS EITHER EXTREMELY "SHORT-SIGHTED" OR EASILY SATISFIED, **OR BOTH.**

WISE MEN SAY **"SHOW ME"**

(THE TRADE MARK)

"ALL
HEART
FOR
BEE-
KEEPERS'
USE
(Of Course)

**SOUTHERN CYPRESS MANUFACTURERS' ASSOCIATION**
1251 PERDIDO BANK BLDG., NEW ORLEANS, LA., or
1251 HEARD BLDG., JACKSONVILLE, FLA.

TRADE MARK REG. U.S. PAT. OFFICE

**ALUMINUM HONEY COMBS**

**Have you Extracting Combs sufficient for those short heavy honey flows?**

**The shallow extracting Aluminum Honey Comb gives you immediate and adequate storage**

PRICE LIST

| | |
|---|---|
| Standard Langstroth (Hoffman brood-frame) size, each | 60c |
| Shallow Extracting (5⅜ in. deep) size, each | 50c |
| Modified Dadant (Jumbo depth) size, each | 70c |

Prices are f. o. b. San Antonio, Texas.

| | |
|---|---|
| Parcel Post weight, 1 comb | 2 lbs. |
| Parcel Post weight, 10 combs | 11 lbs. |
| Parcel Post weight, 20 combs | 20 lbs. |

*Write for our new catalog containing full description and prices on*

**LEWIS BEEWARE, DADANT FOUNDATION, ALUMINUM HONEY COMBS**

**TEXAS HONEY PRODUCERS ASSOCIATION**
**1105 S. Flores St.** **P. O. Box 1048** **San Antonio, Texas**
**E. G. LE STOURGEON, Mgr.**

# Airco Foundation

## Use It This Season
## We Want YOU
## to be the Judge.

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# AMERICAN BEE JOURNAL

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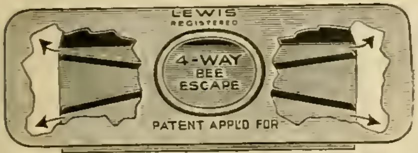

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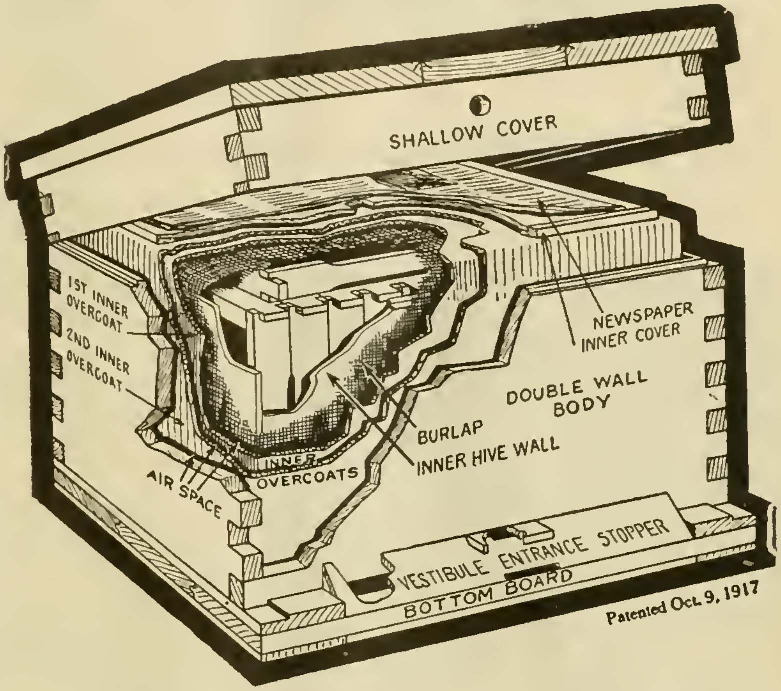

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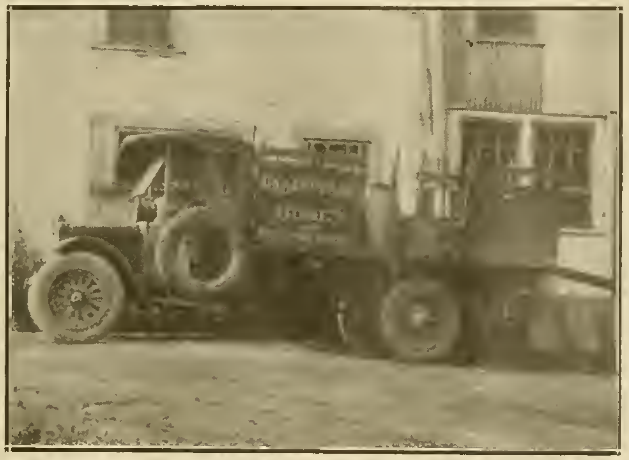

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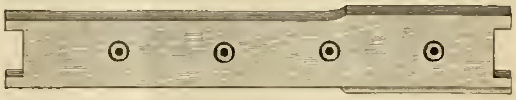

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AMERICAN BEE JOURNAL

VOL. LXI—NO. 4 HAMILTON, ILL., APRIL, 1921 MONTHLY, $1.50 A YEAR

# PACKAGE BEES

BY DAVID RUNNING

MY experience with package bees began in the spring of 1917, and has continued each year since. My records show as follows:

1917—Twenty 2-pound packages of bees delivered at my station April 27, cost $3.25 each, at shipping point. Express charges were 27c each and they were fed about 5 pounds (one comb) of honey each, which at 17c per pound would equal 85c, making a total cost of $4.37 per colony or package.

These 20 packages produced a total of 1,675 pounds of honey, or an average of 83¾ pounds per colony, which at 17c per pound would bring $284.74, of $14.23¾ per colony, making a net return of $9.86¾ per package.

Ten 2-pound packages delivered May 15, or 18 days later than the other 20 cost $3 per package at shipping point. The express charges were 37½c per package, and these were also fed about 5 pounds of honey each, which at 17c per pound equals 85c, making a total cost of $4.32½ per package or colony. These 10 colonies produced 585 pounds of honey, or an average of 58½ pounds per colony, which at 17c per pound would equal $99.45, or $9.94½ per colony, making a net return of $5.72 per colony.

You will notice from these figures that the packages received first gave me $4.14¾ per package more than those which were delivered 18 days later, or an average of 23c per day for each package for the 18 days. All 30 arrived in good condition.

1918—100 2-pound packages were ordered for delivery between April 25 and May 1. Owing to the congested conditions of transportation and to the fact that not enough food was allowed, this lot of bees arrived in very poor condition, many being entirely dead, so that only 39 were built up out of the lot. The shipper made good a portion of the loss, so that the 39 cost, delivered at my station, $356.50. Three hundred pounds of honey was fed at 25c per pound, equaling $75, making an average cost of $11.07. These 39 colonies gave an average of 140 pounds per colony and a total of 5,460 pounds of honey, which netted 25c per pound, making an average of $35, and a total of $1,365, or a net average of $23.83, and a total net of $933.50.

1919—Fifty 2-pound packages received April 21 by parcels post; 2 dead, 5 about 50 per cent dead, 3 queens dead, so far as detected. The 5 partly dead were made into two colonies. Fourteen packages April 25, in apparent good shape. Thirty-three packages April 26 in apparent good shape. Soft maple not yet in full bloom, an occasional blossom open in tops of trees. Three packages April 28, in apparent good shape. May 6 and 10 all cages removed from hives. Total queens dead or missing, 23; these were replaced by the shippers. The above 95 2-pound packages cost, delivered by parcels post, $555. Five hundred pounds of honey was fed at 25c, equaling $125, making a total cost of $680, or an average of $7.16 per colony or package.

The 95 colonies averaged 34¾ lbs. at 24c, making $8.34, and gave a total of 3,300 pounds at 24c—$792. Seventy colonies of increase was made from the above, worth $4 per colony—$280; making an average gross income of $11.29½ and a total of $1,072, or a net income of $4.13½ per package, and total of $392 for the lot. This was the poorest season for bees during my 19 years in the business, owing to cold weather and drought.

1920—May 7, fifteen 3-pound packages received, all in fine condition; May 8 11 packages received in fine

Filling packages with bees in a Southern apiary.

condition; May 10 14 packages received in fine condition; May 11 10 packages received in fine condition; all queens alive and very few dead bees in cages. May 18 all package colonies inspected and all queens laying but four. Two by accident not yet out of cages, one other seen and found laying following day, and one missing.

Fifty 3-pound packages delivered by parcels post cost $377.50, fed 300 lbs. of honey at 25c—$75, making total cost of $452.50. or an average cost of $9.05. These 50 packages gave a total yield of 7,552 lbs., worth at 20c per pound, $1,510.40, or an average of 151 pounds, worth at 20c $30.20, making a total net profit of $21.15 per colony, or $1,057.90 for the 50 packages. 1920 was an exceptionally good season. In all of the above experiments no brood or other help was given except in cases where the queen was missing, in which case a comb with small amount of brood was given to hold bees together until other queens would arrive.

You will note in all of the above that the original packages with such stores as they contained at end of season are not considered. During the first three years of my experiments with packages many queens were liberated in transit and many colonies found queenless later, and by keeping tab on conditions I discovered that nearly all losses of queens were where the queen had been liberated in transit. This led me to believe that since a newly introduced queen is apt to be balled if the hive is opened or disturbed too soon after introducing, that the missing queens were likely balled on account of being liberated while bees were in transit and being disturbed; so in the spring of 1919 I made a note when putting packages in hives of all cages where queens were liberated and, as I expected, found that nearly all queens liberated were lost. This led me in 1920 to request the shipper to fasten the queens in the small cages with a piece of wood or tin and place among the bees so that they could get acquainted, but not liberate her; and out of the 50 received all arrived alive, and only one got lost in introduction. I think this is a good stunt, and would advise shippers of packages to confine queens in cages so the package bees cannot let them out until after introduction in the hives. They should be placed in the package with the bees and close enough to the food so that the bees will not neglect them in case of cold weather, when it is necessary for the bees to cluster close to the stores.

I think a 3 pound package is much preferable to a smaller one, and if received two months before main honey flow, will equal the best home-wintered colonies, provided that they are given drawn combs, shelter and plenty of stores.

My method of handling packages is as follows: The hives with combs are placed on stands before bees arrive, entrances closed, and if 2-pound packages are expected, all combs are removed but 4, one of which should be full of honey. If 3-pound packages are to be hived, I place a box of combs on the top with one or more combs of honey for food, and see that no openings are left. When packages arrive they are taken inside where it is warm and fed all the thin syrup that they will take. (Syrup is made two parts water and one part sugar). They are then placed in a quiet, cool, dark place until evening. I like a temperature of about 60 degrees, as they keep nice and quiet then. In the evening, when it is too late for bees to fly, I take them to the hives, remove queen cage with the bees clustered on it and hang it between two combs near the top. The openings at both ends of large cage are opened, all food removed, and in the case of 2-pound packages, the package is placed in the hive alongside of the 4 combs, the first comb next the cage being the one containing the honey; replace the cover, open entrance so that one bee can pass out at a time and **leave alone for at least a week.** I always run a match through the candy in the queen cage so the bees will release the queens as soon as possible after hive becomes quiet. The 3-pound package is handled the same as the 2-pound except it is placed in the empty hive body under the box of combs, with one end raised up until it touches the bottom of the combs. After **one week** from the time bees were put in hives remove cages, note if all queens are laying, place a good tight chaff division board up next the fourth comb in the hives containing the 2-pound packages; see that there are no cracks or other openings to let in the cold air or, let out the heat; see that there is a wind protection and leave entirely alone for at least three weeks. **You can't overdo this leaving alone,** early in the spring, so long as you are sure they have stores and protection. The 4 combs will be all that they can use if received early. With the 3-pound colonies I remove the empty hive-body, place upper story with bees and combs on bottom-board and otherwise treat same as the 2-pound colonies, except that I leave all of the 8 combs in the hive. I use the 8-frame hive. When young bees begin hatching plentifully, more room should be given as needed, being careful not to give too much at once. From this time on, packages are given same management as home wintered bees.

Michigan.

Package bees as they go to the Northern beekeeper.

# PRELIMINARY NOTES ON THE RELATIVE VALUE OF THE PHYSICAL FACTORS CONCERNED IN HONEY GATHERING.

By J. H. Merrill,

Apiarist Kansas State Agricultural College and Experiment Station.

(Contribution No. 67, from the Entomological Laboratory, Kansas State Agricultural College. This paper embodies some of the results obtained in the prosecution of project No. 126 of the Agricultural Experiment Station.)

The fact that some colonies in a beeyard greatly exceeded other colonies in the amount of honey which they stored during the honey flow, has long been known. Advice has been given to have all of the colonies strong before the honey flow, and that they be of as nearly equal strength as possible. Yet, even when this advice has been followed, it has been found that bees of the same race and of the same age, raised from queens bred by one breeder, differed in the amount of honey which they stored, even though the colonies were brought to as equal a strength as possible. In order to learn why these facts existed, the following experiment has been started at the Experiment Station of the Kansas State Agricultural College. While the results given here are not as conclusive as they would be after the experiment had been carried on a few more years, yet some of them are so strikingly suggestive that it seems worth while to make them public at this time.

Just before the honey flow began, four colonies, numbers 5, 6, 7 and 8, were selected to be used in this experiment. The hives were weighed early in the morning, before the bees had started to the field, and then later the total weight of the hives and hive parts were subtracted from the weights taken earlier in the morning, the difference in the weights representing the number of pounds of bees in each hive.

For the purpose of this experiment, we estimated 5,000 bees to each pound, and in this way we were able to closely approximate the number of bees in each hive. In addition to learning the number of bees in each hive, the amount of brood was measured, and by allowing 5,000 bees to each frame, we were able to arrive at what we termed the potential strength of each colony.

The actual number of bees and the potential number are given in Table 1.

**Table 1.—Number of Bees in the Fall and Spring**

| Hive No. | Actual No. | Potential No. |
|---|---|---|
| 5 | 12,500 | 19,375 |
| 6 | 19,375 | 35,625 |
| 7 | 20,000 | 42,580 |
| 8 | 18,750 | 37,500 |

The reason for using the potential number of bees was to indicate whether any of the queens were lagging behind the others in brood-rearing. It will be seen that although hive No. 5 was not as strong as hives 6, 7 and 8, yet the difference among the three latter, both in the actual number of bees and the potential number, is very small.

Throughout the summer 10 worker bees returning from the field were captured daily at each one of the four hives, and when possible two daily collections were made. The bees were then taken to the laboratory, where each bee's tongue was measured, and the length recorded. The honey stomach was removed from each bee, and the nectar in each stomach was weighed and recorded. The tongue, the empty honey stomach, and the bee's body were then weighed in order that we might learn the relative weights of these bees with empty honey stomachs.

In the fall of the year, by the same system of weighing that we used in the spring to determine the number of bees, we again ascertained the number of bees in each hive. The total amount of honey in each colony was also learned from these weighings. During the summer, 720 bees were examined from each one of the four hives, and at the end of the season the average was taken of the length of tongues, the weight of the bees and the size of the honey stomach, and these averages were then compared with the amount of honey stored in each colony. It was found that hive No. 5, which had a potential strength of 19,375 bees in the spring, increased this number during the summer to 33,333, but in the length of its tongue stood fourth, and third in the weight of the bees, fourth in the size of its honey stomach, and had gathered 61⅜ lbs. of honey during the season, which entitled it to third place. Hive No. 6, with a potential strength of 35,625 in the spring, increased this to 43,540 bees by the fall. It had the second longest tongue, the second heaviest bee, but in its honey stomach, or carrying capacity, it far excelled any of the other three. It brought into the hive 116⅜ pounds of honey, which was the greatest amount brought in by any one of the four colonies. Hive No. 7 had a potential strength in the spring of 42,580. This was lowered in the fall to 41,250. It had the second largest honey stomach, but had by far the largest bees. It brought in and stored 74⅛ pounds of honey, which was the second largest amount stored. Hive No. 8 had a potential strength in the spring of 37,500 bees, and this was reduced by fall to 37,082. It had the third longest tongue, ranked fourth in weight, third in the size of its honey stomach, and as it only stored 53⅜ pounds of honey, it ranked fourth in the amount of honey stored.

The comparison of these figures shows that hives 6 and 7 were either first or second in the length of tongues, weight of each bee, the size of each honey stomach, and in the amount of honey stored. This suggests that the length of the tongue, the weight of the bee (or its size) and the size of the honey stomach may account for its honey-storing abilities. It would seem very probable that where the bees were gathering from flowers which had a deep nectary, that the length of tongue would be a very deciding factor. However, the bees gathered the honey this year from two main forces—alfalfa and sweet clover—and it is evident from the above figures that the tongue length was not the most important factor, but rather it was the size of the honey stomach which determined how much honey could be gathered during the season. When colonies No. 5 and No. 8 are studied, it will be seen that there was a difference of 8 pounds of honey stored, but the fact that colony No. 5 gained about 14,000 bees during the season, whereas No. 8 lost 500, would easily account for the difference in the amount of honey.

Table 2, showing the standing of each colony for the different points considered, is rather interesting:

**Table 2.—Summary of Results**

| Hive No. | Actual No. | Potential No. | Fall No. | Length of Tongue | Size of Bee | Size of Honey Stomach | Honey Stored |
|---|---|---|---|---|---|---|---|
| 5 | 4 | 4 | 4 | 4 | 3 | 4 | 3 |
| 6 | 2 | 3 | 1 | 2 | 2 | 1 | 1 |
| 7 | 1 | 1 | 2 | 1 | 1 | 2 | 2 |
| 8 | 3 | 2 | 3 | 3 | 4 | 3 | 4 |

This experiment will be continued over a number of years, and the results of each year will be compared in the hope that we can definitely decide just what it is that enables one colony of bees of comparably equal strength of another colony to store more honey during the honey flow.

## PASTE FOR TIN

I have seen numerous inquiries in the American Bee Journal for a paste that would stick labels on tin. We have tried all kinds of pastes and glues that we could get hold of, but with poor success, until we tried pure gum shellac, such as painters use for covering knots. It sure does the work. It is not necessary to put it on so very thick, and only around the edge of the label. S. D. Mason.
Minnesota.

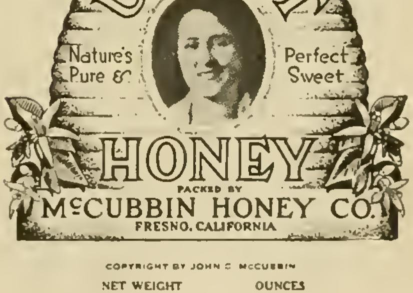
## WAX FROM OLD BROOD COMBS

By F. Dundas Todd

Over a dozen years ago I spent a couple of weeks experimenting on a small scale with various methods of rendering beeswax from old combs. I fairly well satisfied myself that the weight of wax in four ordinary combs was about one pound, but I also learned that combs in which brood had been raised accumulated a surprisingly large amount of dirt, in fact, I found many old black combs that alone weighed a pound—75 per cent dirt and 20 per cent available wax. Furthermore, I found that the more dirt on the comb, the less of the available wax was secured by such ordinary methods of rendering as boiling in water, or heating in the oven.

This year, having had no honey crop, I had no cappings to melt down, but I had made a final roundup of old combs, principally on account of drone cells. Altogether I had 35 pounds weight of these, varying from very black to fainter hue, so I considered I should get not less than 9 pounds and not more than 12 pounds, that is from a fourth to a third, of wax from the mass. The actual return was exactly 11 pounds.

These days, when it is becoming more and more the custom to send old combs to the foundation manufacturers to be rendered, it is advantageous to know just about what one may expect to get in return.



A suggestive label used by a California beekeeper.

AMERICAN BEE JOURNAL
Established by Samuel Wagner in 1861

The oldest Bee Journal in the English language.
Published Monthly at Hamilton, Illinois.

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All subscriptions are stopped at expiration. Date of expiration is printed on wrapper label.

THE STAFF
C. P. Dadant ........ Editor
Frank C. Pellett ........ Associate Editor
Maurice G. Dadant ........ Business Manager

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# THE EDITOR'S VIEWPOINT

## Manitoba Beekeeping

Manitoba is coming to the front in beekeeping. The February number of the Western Gardener, of Winnipeg, contains a report of their Manitoba meeting, January 13. If Manitoba and the western provinces succeed well in honey production, there is room for fine apiaries there. Their next President is G. M. Newton. The Secretary is J. H. Kitley.

The wintering problem is the stumbling block for those countries, and Mr. G. F. West, of Medicine Hat, tells of the Chinook winds, which sometimes change the temperature in one day from -30 degrees to +50 degrees, a variation of 80 degrees. In cases of this kind, cellar insulation is difficult.

The Chinook wind, which descends the eastern slopes of the Rocky Mountains, is called "snow-eater." We know, through a correspondent in central Alberta, about the 54th degree, that wintering bees is very precarious there.

## Mr. Baldensperger and A. B. J.

Perhaps the nicest compliment the American Bee Journal ever received was written by Mr. Baldensperger to us February 5. He was then at Pau, visiting with his daughter, a professor in the College. We quote from his letter:

"When the January number of the American Bee Journal arrived, I had been charged by my daughter to look after the dinner, as she was in her class. I don't pretend to compare my self to King Arthur, in charge of the cakes of the good woman, and which he burned or allowed to burn, but you put so much interesting stuff in that number that I jumped from one page to another; when a big smoke and smell brought me to my senses—the dinner was a dish of coals—all by the fault of that anniversary number, with the wonderful queen. My daughter was sorry, but she pardoned my absence of mind when she saw the number."

## A Larger Journal

For several months past we have added a few pages to our regular size of issue as conditions would permit. This month we have added eight pages. It is our purpose to give our readers just as much as possible for the money they pay us in subscription. There has been a slight decline in the cost of paper from the high point of last year. It is still about four times the old price. However, as yet there is no decrease in the cost of printing, binding, engravings or other items that enter into the making of a publication like ours. We purpose to add new features as opportunity offers, and to put any savings from lowered cost of production into the making of a better Journal.

## Advertising Honey

Since the Honey Producers' League proposes to advertise honey to increase its sale, for the benefit of the beekeepers, it is well for the honey producers to consider the matter.

Advertising is an expensive affair. Yet, it very clearly pays those who do it judiciously. Fortunes have been made in very indifferent products, by thorough advertising, and St. Jacob's Oil, Sozodont, Hostetter's Bitters, advertised fifty years ago, are still popular. Things as unimportant as Williams' shaving cream, Canthrox, Musterole, etc., are enriching their producers because they are spending tens of thousands in proper advertising. "He pays the freight," "His master's voice," and other advertisements, have become household words, because they have been repeated till the people became accustomed to them.

That advertising lasts a long time in its effects is, perhaps, not appreciated by the average honey producer. Let me give here a personal experience:

The Dadants have sent catalogs to beekeepers for about 50 years. In 1891, we began to send addressed return envelopes to the customers. We did it in a modest way, fearing the expense, but they brought back the returns. These first return envelopes were of a small size, easily recognized. Some of them still come back once in a great while, with an order. These have evidently been preserved by the customer, who finds use for them after 30 years! Is it worth while to advertise?

But there is an important question to this advertising. It is its cost. Perhaps some of those who are joining the Honey Producers' League think that all that will be required of them, in order to reap the benefits of thorough advertising through the League will be to pay a dollar a year through their State Association. This is only a drop in the bucket.

I firmly believe that we can maintain the price of honey at 4c above what it would sell at normally (without advertising), if we advertise it as thoroughly as the "Sunkist Oranges" are now advertised. If the American honey producers harvest and sell a hundred million pounds, annually, which is certainly below the mark, they would increase their income by four million dollars. Let us count it at a fourth of that, or an increase in selling value of one cent per pound, this will still make a bonus of a milion dollars a year. Can we afford to spend one-tenth of a cent per pound for this purpose? Figure it out for yourselves, you producers who sell 10,000 pounds of honey annually. Your share woud be a hundred dollars per year. You will need to spend it, in some way, either by advertising your own honey locally, or by joining others for this purpose.

What I have wished to bring out is: that we cannot expect success to fully crown our efforts as long as we grudgingly pay a $1 membership in an association and ask: "How soon is that $1 coming back to me with interest at five hundred per cent?"

## The Making of a Bee Journal

We are always glad to get letters, articles and pictures from our readers, although it is impossible to use them all in the Journal. When an article is returned it should not be considered as a reflection either upon the article or upon the writer. The editors of any magazine worth while must read a great many more articles than they can possibly have room for in their publication. The more material the editor has to select from, the bigger variety he can give his readers and the more interesting his publication should be. The editors of some of the larger popular magazines have eight hundred or more manuscripts submitted each month, while they only use a dozen or two.

Some articles cannot be used because they are too long, some because similar material has already been accepted, some because they are of local interest only, some because they come at a time when the editor plans material of an entirely different nature, and many more simply because the editor cannot use more material than the number of pages printed each month will accommodate. It is often very hard for the editor to decide just which articles to print and which cannot be used. When he has a limited amount of space to fill and has several articles of equal merit, he can only guess which one will interest the greatest number of readers. Since the readers live under such a wide diversity of conditions and are composed of so many kinds of people, a good variety must be selected. The article that one man will pass over without reading will be of great interest to another.

It usually happens that we send more matter to our printer every month than can go in. Some articles now in type have been standing for several months with the expectation of using them at once. When the forms are made up, the type matter must fit the space, and one article may be held over because it is too short and another because it is too long. The article that is just the right length to fit the space is the one that goes in at the last moment.

The principal articles are planned some time in advance of the appearance of the magazine. Our reading pages go to press on the tenth of the month previous to date of issue. All type must be set, proof be read and engravings made, before that time. While it sometimes happens that we take out something already in type to make room for something of immediate importance, as a general rule articles are at hand several weeks before they appear in print. This does not apply to brief notices of conventions and news items that are included in the last forms, which go to press on the 20th of the month.

The last advertisements and news items go to the printer at least ten days before the Journal is mailed

The work of making a publication like ours must be distributed over the entire month, otherwise our help would be idle part of the time, and that would greatly increase the cost of publication.

### Henry C. Wallace as Secretary of Agriculture

The announcement of the selection of Henry C. Wallace as Secretary of Agriculture in the new cabinet, meets with very general commendation. Mr. Wallace is well equipped for the work, having lived for a number of years on a farm, where he specialized in pure-bred stock. He is a graduate of the Iowa College of Agriculture and has been for a number of years the editor of Wallace's Farmer. He has the confidence and support of a large circle of admirers among both farmers and business men.

### A Dangerous Bill

New York beekeepers should be awake to the dangers of a bill now under consideration in the State Senate which proposes "To regulate and prohibit the keeping of bees within village limits.' Such a law, while probably unconstitutional, would cause no end of annoyance to beekeepers of the Empire State and should be vigorously opposed both by the various organizations and by individual beekeepers. Let the lawmakers know that such a measure will be very popular.

### A Missouri Bee School

A three-day bee school will be held at Benton, Mo., from April 4 to 7 A good attendance of beemen from Southeastern Missouri is expected and an interesting program is being arranged. L. A. Schott, of Benton, is the Secretary of the local association and will furnish further information on request.

### C. C. Miller Memorial

Regarding the subscriptions of beekeepers to the C. C. Miller Memorial Fund, it is desired by the Committee to secure at least $5,000 to establish a scholarship bearing this name, using only the interest of the money gathered, annually through a trustee committee, for a scholarship in beekeeping and allied sciences.

Although it was first suggested by Gleanings that the subscription be limited to $1, it has been decided not to put any limit upon the amounts to be accepted, but as small a sum as 25 cents will be welcome.

The members of the Committee, named below, will receive the funds. All the amounts will be acknowledged in the American Bee Journal or Gleanings, or both.

It is desirable that the greater number of subscriptions be forwarded by the subscribers before June 10, at which date Dr. Miller would have been 90 years of age. It behooves the beekeepers of America to thus celebrate the anniversary of this great man, who is acknowledged by the beekeepers of the entire world as one of the most deserving members of the craft.

We shall be glad to have the other bee magazines lend a hand in this and publish such lists of subscriptions as they may be able to secure. If all pull together, we should secure a worth-while sum. Send subscriptions to:

B. F. Kindig, East Lansing, Mich.

E. G. LeStourgeon, San Antonio, Texas.

Dr. E. F. Phillips, Bureau of Entomology, Washington, D. C.

E. R. Root, Medina, Ohio.

C. P. Dadant, Hamilton, Ill.

### Injurious Insects

I wrote some time ago of some interesting works in entomology. At that time I had not yet read Professor Conradi's book entitled "Farm Spies." It is written for the South, with the collaboration of Prof. W. A. Thomas. It treats of injurious insects, such as boll-weevil, the grasshopper, the chinch bug, and ought to be read by every farm boy in the Southern States. It is well illustrated and ought to be worth five times its cost to any cotton or corn producer in Dixie. As our readers know, A. F. Conradi is Professor and Entomologist at Clemson College, South Carolina. He also teaches beekeeping.

### Damages From Germany and Good Samaritan Fund

Our correspondents inform us that there is at last a likelihood of obtaining reparation of some of the damages inflicted by Germany, in the apiarian line, as follows:

Belgium: 1,000 honey extractors, 1,000 wax rendering kettles, 500 Rietsche wax foundation moulds, 2,000 bee smokers.

France, 60,000 straw skeps, with bees, to average 35 to 40 pounds each. All of this is to be supplied the coming fall, 3 years after the armistice.

We were asked at what price the U. S. beekeepers could furnish colonies in straw skeps? Do our subscribers know of any? We don't

Very few of us realize how much suffering there is yet in the devastated regions.

By the way, we have a small amount to add to the Good Samaritan fund:

| | |
|---|---|
| February list | $12.00 |
| John Desmond, Milwaukee | 2.00 |
| L. C. Hartman, Lassen, Calif. | 1.00 |
| J. E. Keys, Frankfort, Ind. | 2.00 |
| Total | $17.00 |

### Flora of France, Belgium and Switzerland

One of the finest works, or perhaps the finest, ever issued on botany is the "Flore Complete" of Gaston Bonnier, the publication of which was delayed by the World War. Three volumes have been issued. The fourth will be out this month, and the printing on the matter of the fifth has begun.

In the three volumes which have reached us, 950 different plants have been described, with color cuts. In some cases, as many as 16 different varieties are reproduced in colors.

As an instance of the completeness of this work, we will say that Melilotus is described under genus 175. Ten varieties of it are described, with 15 color cuts. Four sub-varieties are shown.

Should any of our readers wish to secure this immense work, which will probably not be complete in less than 10 volumes, we will gladly send them information. The cost, at present exchange rates, is about $8 per volume. The text is in the French language.

### Who Should Keep Bees

In the same mail with the article by Mr. Skow, given on page 136, we received another advising every farmer to keep a few colonies of bees. We believe this would be a great mistake. No one should keep bees who does not actually enjoy working with them. The greatest hindrance to success by the average beekeeper comes from the man who owns bees but does not care for them. It is exactly as in orchard growing. The man who has only a few apple trees or peach trees and lets them go haphazard is producing injurious insects for the careful orchardist to fight. If you are not going to take care of your bees, sell them to some one who will, and buy your supply of honey from him.

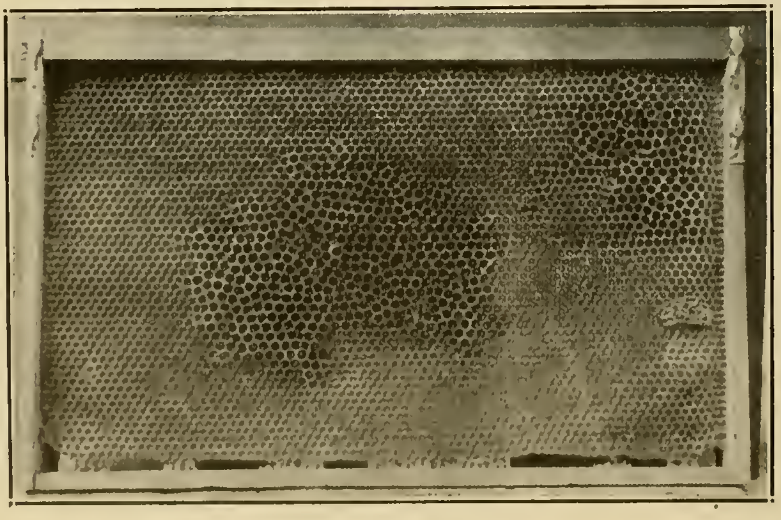
### California Meeting

Mr. Cary W. Hartman, President of the California State Beekeepers' Association, reports that the March meeting at Oakland was the best, in every way, in the history of the State Association. May they have many more meetings as good as this one.

## QUEENLESS BEES AND DRONE-COMB

The photo of a sheet of foundation upon which irregular drone-cells were built, by a queenless colony, indicates why the beekeepers of the old days thought that the queen directed and ordered the work. When we compare the work of a normal, queenright colony, with this, we feel very much inclined to believe that the work upon this comb was done without order, without control. It seems as if the work was begun at different spots at the same time, so that the joints were irregularly formed. They appeared to have felt the need of drones. Yet of what use would drones be to them in such an occurrence? When we witness such work, such waste, we can readily agree with Fabre, who tried to explain nothing, in the actions of insects, leaving only, as he said, "a big interrogation point."

Under ordinary conditions foundation insures worker combs.



Drone-cells built on worker foundation by queenless colony.

## INFLUENCE OF THE DRONE

By Alois Alfonsus

Editor des "Bienen Vater," Vienna, Austria.

Translated from the original manuscript by C. W. Aeppler.

Breeders of dairy cows have learned from experience that the inheritance characteristics of the sire are more pronounced than those of the cow. If a certain sire is descendant from a cow that has established a record in milk production, this sire would possess the characteristics of high milk production in a very much higher degree than would a cow descending from the same mother. Also, it has been found that certain sires, born from exceptional milk-producing cows, inherit these milk producing characteristics to a remarkable degree. It has been found that daughters of such sires produce 1,000 liters of milk per year more than their mothers.

Undoubtedly somewhat similar conditions exist in the case of bees, inasmuch as the Mendelian law of inheritance is also operative. Dzierzon has proved to us that a drone is not related to the drone that mated with his mother, but to the drone that mated with his grandmother. Therefore, the inheritance characteristics of a drone cannot be disregarded.

In every apiary there are a few colonies that stand out above the others in honey production. These colonies can be utilized in rearing the bulk of the drones in the apiary. At the same time every effort should be made to prevent the rearing of large numbers of drones in the other colonies.

Several drone-combs should be given to these chosen colonies. As soon as the combs contain young larvæ, they may be given to other colonies. Even though so distributed they contain brood from the chosen queens. It would not do to distribute combs with eggs only, inasmuch as the workers might remove them, if the colonies were indisposed. However, one must not believe that colonies that are used in this way will yield no surplus honey. It has been established by Professor Dr. Zander at the University of Erlangen that such colonies may give as much surplus honey as any. To begin with, they possess exceptional honey-producing qualities, and while they might produce more honey if the queens were not allowed to fill several drone-combs, this sacrifice must be made to secure the good drones. Even so, the sacrifice is not as great as might be expected with these exceptional colonies.

During the past 20 years, systematic breeding of queens has been going on in Switzerland. All over the land there are observation stations. In 1918 and 1919 an extensive experiment was carried on. The production of 1,500 colonies, headed by queens from selected breeders, was compared with the production of 1,500 colonies as ordinarily found over the country. The experiment was conducted with the greatest possible care under expert supervision.

The season of 1918 was a good one, and the well-bred colonies produced an average of 72½ pounds per colony; whereas the others yielded only 52½ pounds per colony.

The season of 1919 was a poor one, the well-bred colonies yielding 10 kg. and the others 8 kg per colony. With honey worth 6 Fr. per Kg., the well-bred colonies yielded 36,000 Fr. more in 1919, and 144,000 Fr. more in 1918 than the others.

Every beekeeper cannot be a queen breeder. However, every beekeeper can practice the rearing of select drones. In time the quality of the drones in his apiary will be better, with the result that his profits will be increased.

## AN APPEAL TO THE MANUFACTURERS OF BEE SUPPLIES

By Allen Latham

Since receiving the 1921 catalogs of bee supplies I have been doing some figuring. The results of this figuring foretell the doom of comb-honey production, unless the industry is rescued through the invention of cheaper supplies for the comb-honey producer. Sections, cartons, shipping cases, are now so costly that one cannot produce and market a first-class crop of comb honey and make a profit. Look at these estimates, most of which are under rather than over the mark. Follow a section of honey from producer to consumer.

| Item. | Cost |
|---|---|
| Section | 2 cents |
| Foundation | 1 cent |
| Labor of preparing | ½ cent |
| Percentage of loss | 2 cents |
| Carton | 3 cents |
| Labor of marketing | 1 cent |
| Share in shipping case | 4 cents |
| Overhead | ½ cent |
| Total | 14 cents |

By percentage of loss I refer to broken sections of honey, to unfinished sections, to poorly finished sections, etc., an item often overlooked in comb-honey production.

In regard to cartons. One can get along without them, but it is not fair to the consumer. Dusty sections of honey will kill the trade also, and all will concede that we should not get along without cartons.

The overhead charge is merely that of buildings, machines, insurance and the like. It does not take into account the labor of the bees. No account of this last item is taken at all.

| Item | Income. |
|---|---|
| Wholesaler | 2 cents |
| Retailer | 6 cents |
| Producer | 3 cents |
| Total | 11 cents |

11 plus 14 equals 25.

These last figures are assuming that the section retails for 25 cents. Assuming it to retail for 30 cents, these figures meet that price.

| Item. | Income. |
|---|---|
| Wholesaler | 3 cents |
| Retailer | 7 cents |
| Producer | 6 cents |
| Total | 16 cents |

14 plus 16 equals 30.

It will be seen from these figures that a producer of comb honey gets a return from $3 to $6 for every hundred sections of honey he produces.

This is a return that is prohibitive. Few localities exist that would warrant a man's undertaking to produce comb honey for such returns.

It may be argued that I have given too low a figure when I offer 25 and 30 cents as the retail price for a section of honey. True, we have been getting from 40 to 75 cents for a section of honey. If those prices were to hold it would pay well to produce comb honey even with the present cost of supplies. Unfortunately, those prices are not going to hold. I am confident that comb honey will not move in the fall of 1921 at over 30 cents per section. It is now a very slow seller at 40 cents in many markets. Only the fact that the market is low renders this price possible. If comb honey were abundant the retail price today would come down to 30 cents, or the honey would stay on the shelves and counters of the stores.

I do think that we shall be able to dispose of our comb honey next fall so that it will retail for 30 cents, provided the grade is good and sections well filled. Off-grade sections will not bring that sum.

How, then, are we to meet this contingency? Shall most of us stop the production of comb honey and let it become altogether an article of luxury, to be sold at a high figure to a few consumers who can afford to pay for it? Or shall we cut down the cost of production and marketing so that an average person can eat comb honey if his palate demands it?

Two items at least can be cut down in the expense sheet. Cartons will be made for less, and should before next fall come down to 1½ to 2 cents each. Shipping cases can be made for far less than they are listed. Lumber is high. Use a substitute. Several makes of wall board would serve well for bottom, sides and top of shipping cases. I can make shipping cases for my own use for less than half the listed price, and they will be well made, too.

I urge the manufacturers of bee supplies to come to the rescue and get out cheaper forms of shipping cases, and if possible to cut the cost in other items connected with comb-honey production. Let us not allow comb honey to become altogether obsolete.

Connecticut.

(When Mr. Latham's article was received it was referred to Mr. Hawkins, of the G. B. Lewis Company, for reply. We believe that both the beekeeper and the supply dealer should be heard. The following is the supply dealer's side of the case.—Ed.)

### Why Supplies are High

A reply to Mr. Latham by Kennith Hawkins

Sections and shipping cases are higher in price than they should be. It is not our desire that they should be, for when prices of containers are too high to allow the honey producer a fair margin of profit on his product, the sales by the manufacturer are reduced to a figure which does not warrant the heavy investment in buildings and machinery.

It is not possible to sell beekeepers' supplies below present prices when the prices are based on lumber and labor at the costs to us which entered into the goods we are now selling. Prices of supplies were not advanced early in the season of 1920, although nearly all other lines were advancing. Beekeepers' supplies were not advanced in price at that time because we gave the beekeepers the benefit of prices based on raw materials bought at lower costs in 1919. When these were exhausted, prices on beekeepers' supplies had to be advanced to provide an industrial living. While present indications point to lower prices on most items for the season of 1922, it is not possible to reduce prices at this time.

This company maintains that supply prices have always been higher on some items than they should have been, and that this may be charged to the beekeeper we will try to show in this statement.

The producer and shipper of comb honey is to blame for the higher cost of shipping cases, because he demands a **show case** in which to ship his produce instead of a simple container designed to carry the contents to the retailer in proper condition.

The name "shipping case," as applied to the article furnished today for the shipping container for comb honey is a misnomer. A "shipping case," so called, constructed as it is demanded by the beekeeper, of absolutely clear lumber, and with a glass front, is nothing more or less than a show case, pure and simple. If this article were listed in bee supply catalogs under the correct heading of "show cases," the prices listed today would be low.

Why should the producer furnish the retailer with a show case for every 24 sections of comb honey sold? When the retailer has sold the honey, the case is most frequently scrapped. Retailers are not continuously furnished show cases gratis with other articles they sell, even jewelry.

In securing a new customer, it would be good business to furnish him gratis with two or three of the glass front show cases, for display purposes, but why continue to do this with every 24 sections of comb honey?

A change in the shipping container for comb honey should be made, and is no doubt necessary. If such a change necessitates a change in the standard package size, such a change will have to be made. An old rule is of no use whatever if it does not meet present day conditions. Mr. Latham suggests a substitute for the present shipping cases. This would be very easy for us. Has Mr. Latham the power to force beekeepers everywhere to change their standards of grading honey and to get them to accept such changes? This requires concerted effort by American beekeepers. We will welcome the advent of this change.

A similar proposition confronts the manufacturer in the matter of sections. The grading rules require white sections. This is unnecessary. We agree that sections are too high, and no one regrets this more that the G. B. Lewis Company, whose men invented the one-piece section honey box. Section prices are based on basswood lumber, which had to be bought under contract in 1919, or very early in 1920 for 1921 sections, at prices then prevailing. Such lumber can be contracted for today at less, but is being cut in the woods, and will not be fit for sections until the present season is practically over.

All this is because the beekeeper insists on a white section. Honey tastes as sweet and could be sold as well in a brown basswood section as in a white one. If we did not have to throw out the brown basswood, which frequently runs as high as 40 per cent of the stock, the cost for material would be less. To consume this brown stock, it is necessary to figure it at less than cost, disposing of it at a loss as best we can, in one way or another, and which procedure, of course, increases the cost of the white, in order to make the average equal the original cost of the stock as received.

Hence the beekeeper has to pay for what he insists upon. Until the grading rules for comb honey are changed, and they should be at once, we cannot help much in that respect. We make what the beekeeper insists upon, and in some such items, those who have made the grading rules have not asked the advice of the manufacturer, who knows costs, and frequently a poor choice was made.

Many minds are better than a few. We welcome constructive criticism like Mr. Latham's, and we have the facilities for experimenting. Most suggestions we get are useless because they do not take the quantity manufacturing problems into consideration, or the beekeeper demands more for an idea than the profit on the article over a period of several years.

The G. B. Lewis Company has experimented extensively during the past winter with other kinds of wood than basswood for sections. We have found some that would make cheaper sections, which look just as good as basswood, but the wood could not be purchased in required quantities. In others, the percentage of waste wood ran too high. Consequently, the quickest relief is a change in the grading rules, and to continue to use basswood, which is available.

Mr. Latham wisely suggests an alternative, if supplies will not cheapen in price this season, of decreasing the cost of producing and marketing honey. Put yourself in the supply manufacturers' position. Suppose we did no advertising? Suppose we did not buy in advance of our raw material needs for each season? Suppose we made our goods and then let some one else sell them at little profit to us? These points can be remedied in the production and sale of bee products and will fit in as suggestions along with Mr. Latham's ideas for the consideration of the beekeeper who is willing to try to help himself.

The present honey grading system of American beekeeping is at fault and beekeepers should get behind some national body which can change the honey-grading rules, and bring them up to date, which can advertise to create a demand for honey because it is honey, and not because it is a substitute for something else, or because it is being pushed as a luxury. The American Honey Producers' League is attempting to do this. We do not say they alone will succeed, but we will work with them as long as they honestly try to help the beekeeper.

## TOO MANY BEEKEEPERS

By Oscar Skow

Too much can be said in the farm papers and on the street corners about how much money there can be made from a few stands of bees. This creates a class of beekeepers who think that great wealth can be accumulated without cost or labor.

Consequently they will produce two or three hundred pounds of honey in box hives, without much cost or labor, and as a rule will sell their crop at whatever they can get, and establish a price with which the professional beekeeper cannot compete. Thus, for the last three months I've been unable to sell a single pound of honey in the neighboring towns, where I used to dispose of a good deal of honey . Consequently, I've had to seek a different market. When our professors and lobbyists also get these distant territories covered by novice beekeepers, where will the professional with his large crop dispose of his honey?

It would be much better, I am sure, if the professor and others who seem so determined to increase honey production would help the fellow who has already produced heavy crops, to find a legitimate market.

Iowa.

(There seems to be a general impression that there is a large increase in the number of beekeepers in this country. The census shows the contrary to be true in many States. The fact of the matter is that with the general teaching of better methods hundreds of beekeepers of the class mentioned are going out of business. The work of the colleges instead of attracting a large number of irresponsible people to take up honey production is having the opposite effect. The fellow whose only interest is in finding a snap does not listen to one of these college professors very long until he decides that beekeeping is entirely too difficult for him.

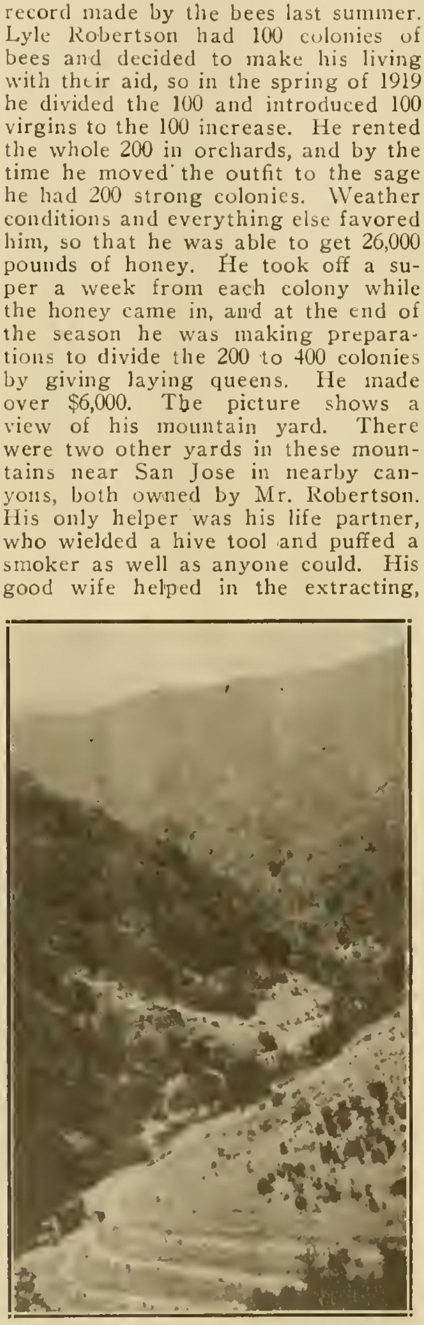
It is true that more honey is produced than in the past, but it is produced by fewer and better beekeepers, who use better methods. The colleges are making a study of the marketing problem and doing much to assist in extending the market for our product. This is a free country and there is nothing to prevent a man from engaging in beekeeping if he wishes. Neither is there any way to prevent him from selling his honey below the cost of production if he will. It is far better to make good beekeepers of those who engage in the business, and this the colleges are doing.

We quite agree with Mr. Skow that too much loose talk about the easy profits in beekeeping may do some harm by starting men to keeping bees who are not fitted for the work. Such however, will not last long.—F. C. P.)

## A SUCCESSFUL CALIFORNIA APIARY

By Bevan L. Hugh

The photo showing the mountain scene is remarkable in view of the record made by the bees last summer. Lyle Robertson had 100 colonies of bees and decided to make his living with their aid, so in the spring of 1919 he divided the 100 and introduced 100 virgins to the 100 increase. He rented the whole 200 in orchards, and by the time he moved the outfit to the sage he had 200 strong colonies. Weather conditions and everything else favored him, so that he was able to get 26,000 pounds of honey. He took off a super a week from each colony while the honey came in, and at the end of the season he was making preparations to divide the 200 to 400 colonies by giving laying queens. He made over $6,000. The picture shows a view of his mountain yard. There were two other yards in these mountains near San Jose in nearby canyons, both owned by Mr. Robertson. His only helper was his life partner, who wielded a hive tool and puffed a smoker as well as anyone could. His good wife helped in the extracting, moving and everything else about the yards, in addition to cooking for the household, for they have two healthy youngsters, a boy and a girl. Mr. Robertson, prior to keeping bees in earnest, operated a truck, but now he uses the truck in moving his bees, and he finds that there is more money in bees than in trucking. After the season's work in the Santa Clara Valley the beemen take their guns and hunt ducks and quail in the swamps and mountains.



A California apiary which produced $6,000 worth of honey last season.

## DADANT SYSTEM OF WINTERING BEES

Reply to Mr. E. A. Burdick by Dr. D. W. Gibson

On page 65 of American Bee Journal for February is an able paper under above title. The paper is clothed in pleasing rhetoric in treating the negative of outdoor wintering in packing cases. With the consent of Friend Burdick I will ask the privilege of presenting the positive side of the method.

Having just re-read the Dadant System of Beekeeping, I failed to find therein adverse principles to those which I tenaciously adhere to. This is a neat little volume of 115 pages full of constructive information, which is carefully read in some three evenings, and each progressive beekeeper can ill afford to be without it. I heartily subscribe to the large hive doctrine, the difference being that I insulate and the author does not. When one adopts the use of the packing case, and specially if one insulates the brood-chamber all year, the 10 frame Langstroth hive at once becomes too small for the size of colonies produced. The proper use of the packing case will greatly assist the beekeeper in raising his bees before and for the harvest, and not upon the honey flow.

Now it is distinctly understood that Friend Burdick and I are merely treating opposite sides of the question of insulation; his contention being that it is a disadvantage and mine being that it is an advantage.

He speaks of the theory of the packing case being based upon the erroneous idea that it will provide a steady warmth. Technically, neither the packing case nor the insulation provide the warmth, but **conserve** is the word. The bees provide the warmth, and the insulation is used simply for the purpose of conserving the animal heat and maintaining an even temperature. My consideration is not confined to any one kind of packing material, sawdust having been mentioned, but to the various insulating materials used by those following the method.

In saying "They are small ice boxes" he fails to recognize the fact that the function of the ice box is very different to the function of the insulation. The ice box is made to exclude heat and maintain a low temperature of mere inert matter void of life and without the ability to raise or lower its own temperature. The insulation serves as a sort of balance wheel or kind of god-father to protect the cluster from the inclement rigors of winter which prey upon and in many cases sap the last atom of warmth and vitality from the cluster.

In saying the cold gets in slowly, and out more slowly, it must not be forgotten that there is no frost nor frozen material nor moisture in nor about the packing case. The ideal packing material would be of a porous, dry nature, and a good nonconductor of heat and cold, and one that will exclude as nearly as possible all the air from between the hive and packing case. Right here lies the secret of success of insulation, in using a material that excludes most of the air and yet is a good non-conductor of heat and cold. Exclusion of air from insulation prevents fluctuation of temperature. When all conditions are right the insulated colony will have all hive walls and cloth cover dry enough that you can strike a match upon them any day in winter. It is but little short of crime to leave bees exposed to the inclement rigors of winter so they will be forced to fairly drench themselves with moisture from respiration, from laboring so hard to keep warm. This condensed moisture given off from cluster while violently exercising will saturate their cloth cover, combs and inner cover of hive and often run out of hive and make a puddle on the ground. This damp condition within the hive is hard on bee life, the same as it would be on people. When kept warm, their quiet state of rest prevents moisture formation.

In missing an opportunity for flight I must say that my findings have been different to that of Friend Burdick. My bees are comfortable and easy every hour of the winter, and when the sun shines out warmly they are ready for a good voiding flight. Theoretically, he may be right in saying bees come out more readily from the single-wall hive than from the packing case, but the reasonable application of science has proven the ideal wintering conditions to be where they approximate that perfect state of quiescence, for in its last analysis, good wintering means nothing more nor less than the nearest possible approach to absolute quiescence. Seldom, if ever, does a month pass in this State without a flight from packing case, but possibly it is because our bees are of a rustling kind, though I doubt it. It is alleged that the packing case keeps them hidden away so far from the light that they miss their voiding flight on many nice days; but take it from me that you can trust them for that. You can no more keep them indoors on a suitable day than you can keep a bunch of children in the house on a fine warm day after a bad spell of weather. In fact, we feel that our bees fly more than is necessary in winter when there is several inches of snow and when things are frozen hard. It is just possible that some folks may have lazy bees; if so, better change the strain.

Relative to brood-rearing out of season, we have never noticed one case where there was much brood before there was natural pollen available, and from then on there has always been a regular development of brood, unless something out of the ordinary prevented.

As to the neighbor whose bees wintered poorly from insulation, some essential was neglected, and proper conditions did not obtain. It is difficult to get things just right the first time, and a person seldom makes the same success at first as later by experience.

The atmosphere within the hive must be dry, fresh and pure, and yet maintained at an even temperature which will give the bees comfort and ease with a minimum cluster temperature of 57 degrees and a maximum of not much above that. If there is any way to obtain this in cold climates without some form of insulation we are anxious to get the formula. The cellar is one form of insulation, also a number of other methods are in use, but **insulate** you must for best results.

The bare gunnysack alone for winter compares with a warm cloth cover with 12 or more inches of warm, dry insulation on top of it, similar to a man sleeping under a sheet in zero weather, while the other fellow is snugly covered with sufficient blankets to keep him comfortable, or with the modern "Seemore" ball gown compared with the comfort of a sealskin overcoat. In each case one generates and gives off as much heat as the other, the difference being in the conservation of that heat

Actual experiments of science have proven that a wind blowing 20 miles an hour will blow through a 13-inch brick wall, and due to this fact it is unreasonable to claim that in zero weather bees will be comfortable within a one-inch wall, and some with cracks and holes in them.

One pound of honey will produce 1,485 calories—the calory being the unit of heat required to raise the temperature of one gram of water 1 degree C. This means that the pound of honey will produce enough energy heat to raise the temperature of one gram of water 2,673 degrees F., or raise the temperature of 2,673 grams of water 1 degree F. Take 45 pounds of honey for the average colony—this being the amount recommended by the Bureau of Entomology —and when consumed you will find the colony has generated and given off enough energy heat to raise the temperature of 120,285 grams of water 1 degree F. In view of this fact I fail to understand how a man thoroughly grounded in theory and practict can consistently claim that it is not beneficial to conserve all this animal heat for the comfort of the cluster.

It has been proven through scientific experiments that live stock will reap as much benefit from 2 pounds of food when they are warmly housed as they will from 3 to 4 pounds when kept out in bad weather. Then does not the same principle hold true with bees?

Were it not impolite and lacking in courtesy, I would say that the claim that insulation is a refrigerator that keeps bees chilled and causes heavy losses is a fallacy, for in reality this fallacious statement is harmful to the undecided man who is earnestly casting around for a better method to tide him over the winter losses. No theory is stronger than the actual results it will give through scientific experiments.

I have been making experiments with wintering some colonies in cellar, some in packing cases and some on their summer stands unprotected. As a rule those in cellar and those outside do not vary much in final results, while those kept insulated all year give a marked advantage over the ones taken out of packing in spring, and the ones in packing case from fall to spring do better than the cellared bees.

It must be remembered that the details of insulating can not be carried out in the same manner in all localities. In a dry region you may put your insulation directly on the ground, being careful to prevent all moisture from getting under, but in a region of much precipitation the packing case must be raised well up from the ground. One can insulate anywhere where hay or forage will keep dry in the barn, but in exceptionally humid

Some colonies produced 300 pounds of clover and basswood honey in the apiary of F. J. Thurn, Edgewood, Iowa, in 1920.

sections it may be a failure. The first cardinal requisite is that there must be absolute dryness or else your insulation will be a failure. The individual must be able to meet the exigencies of the time and place and conditions.

Utah.

(From the foregoing article the reader should not get the impression that the Dadants do not use winter packing. They pack all colonies wintered outside, with dry leaves, held in place with wire netting. They do not use wood packing cases, because of the high cost and because with 800 colonies the labor of packing is much greater than by their present method. —F. C. P.)

## THE ORANGE AS A SOURCE OF NECTAR

By Frank C. Pellett

In the markets of America, orange honey is famous for its high quality. Of light color, heavy body and fine flavor, it is much in demand. Usually the buyer is willing to pay a premium over prevailing prices in order to secure it. Since the area where oranges can be profitably grown is confined to limited regions in California, Florida and the Gulf Coast, it can never be produced in such quantities as is honey from alfalfa or the clovers.

Under favorable conditions, orange trees yield nectar so freely that it seems almost impossible for the bees to gather it all. As high as 400 colonies are kept in a single yard where there are large orange orchards within reach, and the average is often 60 pounds or more per colony. In the interior valleys of California the nectar flow seems to reach its heaviest yield. Not only does the orange yield more freely in the interior than along the coast, but the crop is much more dependable. Along the coast the fogs are unfavorable and the orange flow is much lighter and very uncertain. In conversation with the beekeepers, located near the groves of Satsuma oranges, along the coast of Mississippi, I learned that they did not regard orange as of much importance to them, except under unusual conditions. Likewise in Florida, where climatic conditions are different, orange is much less important than in the California valleys already mentioned. There are small orange groves in the Rio Grande Valley of Texas, but as yet there are no areas comparable in size to those of California.

At Visalia, beekeepers report that the flow from oranges is so heavy that the clothing of men and harness of horses engaged in cultivating the groves become saturated with it. Some years it lasts three weeks or more.

The extent of the flow can be best understood from the results obtained by individual colonies. A Tulare County beekeeper stated that he extracted 171 pounds of honey from one colony in ten days' time. He had previously extracted 24 frames of honey, from this same colony, that had not been weighed. This probably amounted to more than 100 pounds. Another beekeeper who moved his bees to the orange orchards was troubled by drifting when the bees were released. This made some very strong colonies, while leaving others weak. Some of these extra strong colonies stored four full-depth supers in four days. While these were exceptional cases, they do show what could be done generally if all colonies were strong at the beginning of the orange flow.

In visiting with the beekeepers of California, one finds two plans for utilizing the orange flow. One class of beekeepers count on building up their bees ready for later flows from other plants. The other class winter their bees with a big reserve supply of stores and count on getting the bees into condition ahead of the flow so as to harvest a good crop from the orange. Since the orange flow usually comes early in April it requires some attention on the part of the beekeeper to get his bees into proper condition sufficiently early to make the most of the orange crop. I found beekeepers who extract everything possible in the fall, leaving only enough to carry the bees through the winter. This plan makes it impossible for the bees to start heavy breeding early. On the other hand, some beekeepers count on leaving at least 50 pounds of stores with each colony and sometimes more, to insure early brood rearing. This latter plan usually brings a big return from the orange crop and leaves the beekeeper in equally good shape for the later flows.

There are few good locations in the best orange territory in California where the bees can be kept in the same location with profit throughout the year. In many cases the bees are moved several times to secure crops from several different sources.

Orange blossoms. (By Florida Photo Concern.)

## THE RELATION OF BEEKEEPING TO FRUIT GROWING

By Dr. A. L. Melander

Entomologist, State College of Washington

Bees have long been known to be of value in pollenating plants, but just how far fruit trees are dependent on bees is not so thoroughly known to the general fruit grower. A number of carefully conducted experiments have been recorded in various bulletins and reports from which the following citations have been gleaned:

Different varieties of fruit are either self-sterile or else partially self-sterile. In the first instance, bees or other agencies for the transfer of the pollen grain are an absolute essential if the fruit is to set at all. In the second instance, where flowers are only partially self-sterile, a full crop of fruit would not result if all insects or other agencies for the transfer of the pollen were eliminated. In the third instance, of complete self-fertility, there are abundant records to show that crossing produces better fruit. Hence, in every case the fruit grower will profit by having bees in his orchard. In no case are bees detrimental.

Among the varieties of apples that are known to be self-sterile are the Arkansas Black, Gravenstein, Gano, Jonathan, King, Mammoth Black Twig, Missouri Pippin, Rome Beauty, Rhode Island Greening, Transcendant Crab, Wealthy, Winesap, Yellow Belleflower and York Imperial.

Among those only partially self-fertile are included the Ben Davis, Spitzenburg, Wagener and Yellow Transparent.

Among those that are self-fertile are the Baldwin, Grimes Golden, Dutchess of Oldenburg and Yellow Newton.

Experiments conducted by the Oregon Experiment Station have shown that while the Spitzenburg is regarded as partially self-fertile, it produces only 3 per cent of fruit when self-pollenated, but when receiving pollen from the Arkansas Black it will set 70 per cent of its fruit. Similarly pollen from the Ortley, Jonathan, Baldwin or Red Cheek Pippin produces a heavy set on Spitzenburg, while pollen from the Yellow Newton produces only about 40 per cent set. Such experiments are the result of hand pollenation, but are indicative of what would happen when bees visit from flower to flower.

Other varieties of fruit show a similar variation as to fertility.

Most pears require cross pollenation, since they are only partially, if at all, capable of setting fruit when self-fertilized. The California Experiment Station has demonstrated that plums and prunes will present a vastly heavier crop when cross-pollenated, both being more or less self-sterile.

Of the cherries, the Royal Ann, Bing, Black Tartarian, Lambert and Black Republican are self-sterile. Thirteen varieties of almonds experimented with at the California Experiment Station were wholly self-sterile. Peaches have also been demonstrated to be almost entirely dependent on the visits of bees if a good crop is to ensue.

Of the smaller fruits, raspberries, blackberries, strawberries, cranberries, etc., are all abundantly visited by bees, and the amount of fruit that would set is entirely proportional to the number of visits.

The question of the distribution of pollen by wind has been settled at the Oregon Experiment Station by fastening slips of vaselined glass in and near apple trees. So few pollen grains were caught on the sticky glass as to prove conclusively that wind is not at all an agency in carrying across apple pollen grains from one flower to another.

It has been proved that if blossoms do not receive pollen grains they fail to set. This is the main explanation for the familiar "June Drop."

It requires one pollen grain for each seed, five pollen grains must, therefore, fall upon and enter each apple flower, while the strawberry or raspberry would require many more grains.

When a pollen grain falls on the sticky stigma, the female part of the flower, it starts to grow down a tube carrying the sperm cells into the innermost parts of the blossom. The union of a sperm cell with an egg cell starts the growth of the seed. Unless all seeds are started, the fruit becomes misshapen in its growth, if it does not drop entirely from the tree. Hence, a complete pollenation with healthy viable pollen is the first requisite in the setting of a fruit crop. As shown in the preceding page, some varieties of pollen seem to be better adapted than others in insuring a complete fertilization. Even in case of self-fertile varieties, pollen from other blossoms, or better from other trees, or perhaps better still from other varieties, is needed for best results.

It is interesting to note that, contrary to popular opinion, pollen grains do not affect the color of the apple. A Spitzenburg pollenated by an Arkansas Black is no darker than if pollenated by a Newton, but many more apples would set from the Arkansas Black pollen than if the pollen were obtained from a Newton tree. The former polen is more effective, more likely to start the complete production of seeds, hence the result is larger and better formed apples, even though the color is not affected.

Many millions of years ago the first flowers came into existence and also the first bees. Since that time these two developments of nature have worked up an inter-dependence, so that the modifications of flowers as we know them have been developed through the agency of bees. In a corresponding way the bees have become modified in their body parts, as an adaptation to floral structure.

Flowers develop showy petals to attract the bees. Nectar is produced at the bottom of the floral parts to force the bees to dip down as far as possible in securing it. Pollen is produced in over-abundance as a delicious food for the bees. Bees in their turn have developed a long tongue for lapping up the nectar, a crop for storing it for the flight home, a body covered with remarkable pronged hairs for collecting the pollen and adaptations on the legs, the pollen baskets, for scraping together and transporting the pollen load.

### Pollenation

In the visits to flowers, bees come in contact with the pollen; the little grains covering their body are then rubbed on the sticky stigma, often as a result of a remarkable arrangement in the formation of the flower parts. After pollenation, the stickiness of the stigma dries up so that the flower is receptive only for a few days, usually at the beginning of the blossoming period. As a further result of pollenation, the nectar ceases to be produced and the petals drop quickly. The flower is no longer attractive to bees.

Some trees that have a tendency to overset fruit, requiring costly thinning in commercial orchard practice, might be rendered less prolific if bees are withheld, or if sprayed with some corrosive spray that would destroy the stigma surface. The only drawback to such a recommendation is that if carried out one would not be sure of a setting of fruit at all. Most fruit men would prefer to thin a superabundance of fruit than to run the risk of getting no setting.

At the beginning of the fruit blossom season an orchard should be humming with bees. In fact, by actual observation in normal orchards, the honeybee has been found to outnumber all other visitors of flowers a hundred to one. Other insects may be present, as for example, a few bumblebees, some wild bees, a few butterflies and several species of flies; but all of these combined would have but little effect in cross-pollenation if the honeybee were excluded. Where actual tests have been made where either branches or whole trees have been inclosed in netting so as to exclude bees, it has repeatedly been found that the fruit crop suffers. Many practical orchard men hire bees for the blossoming period, the usual price to beekeepers being $5 per colony.

Keeping a small apiary in the orchard will bring returns many times greater than the cost of the colonies. Every one has noticed how fruiting has been interfered with by bad weather at blossoming time. When bees are not flying, the trees hold out the inducement of their blossoms a longer time, but if cross-pollenation is not forthcoming a heavy June drop may be expected. This is an important factor in growing prunes, berries and other fruit, especially in western Washington.

In this mutual arrangement of give and take the fact must not be lost sight of that it is the fruit grower who profits most. The bees insure a crop of fruit. Due to their activity the crop is increased, perhaps by 10 per cent, perhaps doubled. In return, during the day or two that each flower is visited, they get some pollen and nectar, not enough to build up stores, but only enough to stimulate brood rearing.

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## THE LARGEST FAMILY OF BEEKEEPERS

We reproduce herewith photo of the family of Mr. and Mrs. P. Mohr, of Bettendorf, Iowa. There are fifteen in this family and they are a healthy looking lot. We are interested in knowing whether there is a larger family of beekeepers anywhere than that of Mr. Mohr. If any of our readers know of a larger family of beekeepers we will be glad to have a picture and some information concerning them. Mr. Mohr writes that all the members of his large family like honey, but that only one—Anthony—likes the bees.

A large family of beekeepers. P. Mohr and family, of Iowa.

## IRREGULAR LAYING OF EGGS

The queens need to lay an immense number of eggs during the breeding season previous to the honey crop. In order that the laying be continuous, it is necessary that it should be regular, with as little skipping of cells as possible.

The photo which we give is good of larvæ in the cells. But the regularity of the laying, in this case, is far from satisfactory. Whether this queen was too old, or perhaps too young and not yet accustomed to regular actions, or whether she is, in fact, an inferior layer without method, it is quite probable that such a queen would fall very far short of the maximum laying of a good breeder.

## THREE WEEKS OF BEE CONVENTIONS

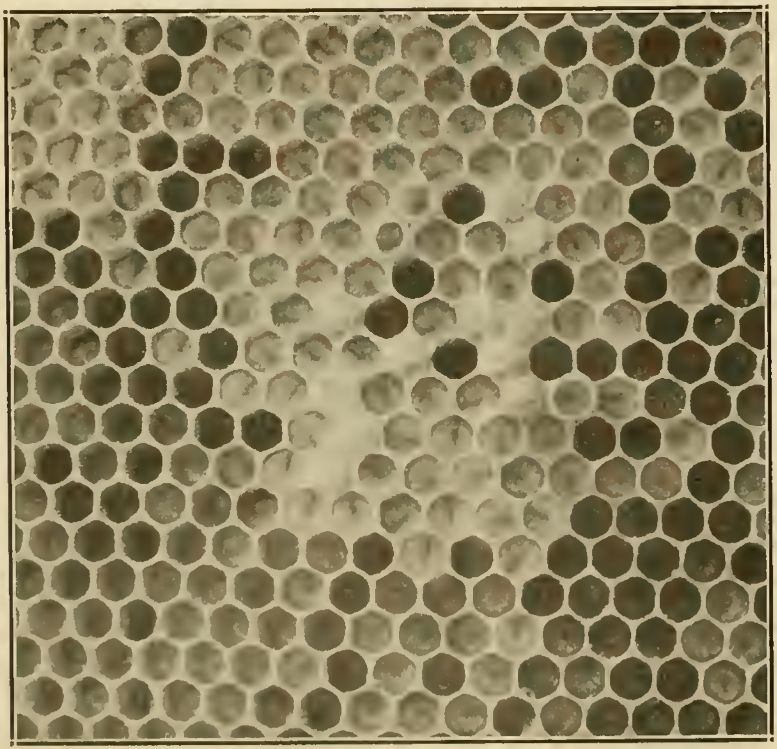
By C. P. Dadant

Lynchburg, Va., is among the hills, at the south foot of the Blue Ridge Mountains. I reached it on Sunday morning, January 16, invited by my old friend, Draper, to his home, a short distance in the country.

This is the same Draper who caused the Root people to manufacture for sale what is called by them the "Jumbo" hive, which is simply a modification of the hive adopted by us, with frames of the same depth as the Quinby and the same length as the Langstroth frame. Draper, who is 4 or 5 years younger than I am, and has been a beekeeper since childhood, visited us as early as 1874, when he was only 18 years old. Our acquaintance was maintained and he thought we had a good method of beekeeping. So in the nineties he urged upon the Roots the adoption of our style of frames, for they had also recognized that the large hive was a progress. The "Jumbo" hive was also called the "Draper barn" for that reason. It is almost identical with the "Modified Dadant," having the narrow spacing of 1⅜, however, instead of the 1½ inches from center to center of frames, which we prefer. We have often given the reasons we have for this preference. And by the way, how many of our readers know that the preference of the manufacturers for the shallow frames was caused by the greater facility of obtaining narrow lumber ? "Stock boards" ten inches wide, were a standard size, and the Langstroth hives could be made of that lumber, while it took 13-inch lumber to make Quinby size hives. Had it not been for that difficulty, I do not hesitate in saying that the deeper frames would have been adopted long ago.

Draper was at the station, waiting for me, but we had not met for some 30 years and each of us was looking for the young man of 30 years ago. Tempus fugit! So we hesitated in recognizing each other.

The Draper home is on the apex of a hill, on a 15-acre triangular farm, with the railroad on one side and a creek forming the other two sides. It is in full view of the Blue Ridge and surely a healthy place, though rather difficult of access in winter. But we got there from the little station of Leftwich, in spite of 6 inches of snow, with the help of a very nice neighbor beekeeper whom he had invited for dinner, and who volunteered to carry my suit case, saying that he "reckoned he could tote it along" and did, with hearty good nature. I spent a very pleasant day with Mr. Draper, his wife who is still young looking, and his two daughters. He has what appears to me a splendid location for bees, on the sheltered side of the hill, with thousands of the tulip trees and sourwood, besides sumac and fall flowers, in close proximity. He has been there only one year and does not yet know just how the location will turn out. His home was originally at Alton, Ill.


Brood showing irregular laying of a queen.

The following morning we went back to Lynchburg, for the bee meeting, which had been arranged with a great deal of zeal by Prof. W. J. Schoene, State Entomologist, who lives at Blacksburg, and Mr. Brandt, of Lawyers. Professor Schoene had cautiously warned me that we might find only half a dozen beekeepers at this meeting, for, he said, "the Virginia beekeepers are lukewarm." He was as pleasantly surprised as I was when we faced a crowd of some 35 or 40 honey producers, crowding the room of the Chamber of Commerce. They wanted to exchange thoughts and experiences. We had a splendid meeting, and I have since heard that they propose to stay together permanently.

Their honey plants are quite numerous: maple, willow, dandelion, tulip tree, sourwood, clover, both white and sweet, holly, laurel, basswood, etc. besides a lot of fall blossoms, such as goldenrod, asters, etc., which should put Virginia in the front rank of honey-producing States. There are still too many "gums" or box hives. I was told that in 1920 the bees secured pollen on the first of January. But this year they had more snow than any other place that I visited.

As I had an appointment for the next day, at Clemson College, S. C., I left that same evening for Calhoun, which is their railroad station. At 8:50 the next morning, I found another smiling face at the station, Prof. A. F. Conradi, Chief Entomologist. Clemson College is also in the shadow of the Blue Ridge Mountains, but close to the Georgia State line.

This college is an extensive institution, comprising some 20 or 30 buildings. There is no city near it, but it has adjoining it a village of some 300 people, with the usual country stores and a bank. Professor Conradi has with him Mr. E. S. Prevost, of the U. S. Extension in Beekeeping, a young and active man, who works in conjunction with their department; Mr. H. S. McConnell, a research worker in entomology; J. A. Berley, quarantine entomologist, and D. M. Anderson, extension entomologist. Much of their entomological work has to do with the boll-weevil that infests the cotton.

The meeting at Clemson College was attended mainly by students. But the following day, at Seneca, we had a meeting composed of a number of practical beekeepers, though some of them were box-hive beekeepers. Mr. Geo. Briggs, the County Agent, had called them together. One of the men present, R. L. Boggs, was a 35-year subscriber of the American Bee

Journal, and he and I felt as if we were old acquaintances.

That same evening Mr. Prevost and I went on to Anderson, where he lives and where I stayed over night in his home, after making the acquaintance of his wife, as nice a young woman as I ever met, and who welcomed me as if she had known me for years.

It had been very cold that day—that is, cold for South Carolina—and my fur cap, brought from Illinois, served very well, but was very much laughed about among our friends, though I thought they would have been glad to have such headgear themselves.

Anderson is a fine city, up to date in every respect, with water works, paved streets washed every morning, electric lights, trolley cars and interurban connections. It has a population of about 15,000. We had there one of the most interesting meetings, with some 50 people present. There, as elsewhere, the County Agent rounded up the beekeepers. We talked bees and cotton, for cotton is the staple crop, and is grown in terraces which follow the ridge of the hills to keep the land from washing. Those terraces, sometimes as many as 20 or 30 in a 20-acre field, have a very picturesque aspect. Grass and weeds grow on their edges and some bee pasture is in this way maintained among the plowed fields.

There does not appear to be much enthusiasm about the yield of honey secured from cotton, whether floral or extra floral, so I do not take it to be a very important source of honey production in that vicinity. Professor Conradi says their whitest honey is gathered from the sourwood.

Before leaving Anderson, I was taken to an immense cotton mill, running 1,500 looms and 70,000 spindles. Cotton mills abound everywhere and the next city in which we met, Greenville, was comparatively as smoky as Pittsburgh.

An instance of what might be called "local color" must be mentioned. On a cool morning, while taking a walk, I saw a darkey, driving a team, who had a fire to warm himself, in a pan, on some ashes, in his wagon.

On the 21st, after four South Carolina meetings, I took the train for Asheville, N. C., to visit with Mr. and Mrs. Elton Warner and take a couple of days' rest, before going to the last meeting of my trip, at Nashville.

## A NEW CLOVER

I am sending a sample of clover about which I would like some information. There is a great deal of this clover in the meadows of the valley. Sometimes it seems to show a liking for soils that are alkaline. Otherwise it grows under the same conditions as does timothy. It makes a good grade of hay, growing from 12 to 18 inches in height. As a honey plant it seems to be almost unequaled in this locality—the honey being of lighter color than is either white sweet clover or alfalfa.

R. N. Sears.

Alturas, Calif.

The specimen is cow clover (**Trifolium involucratum.**) It is listed by Jepson in his flora of Middle Western California as "frequent along streams, by springs and in salt marshes." The plants have much the appearance of the alsike clover common in the east, except that the heads are more nearly the color of the well-known red clover.

Alturas is the county seat of Modoc County, the extreme north and east county of California. I can find no record of this species of clover anywhere outside of California, where it evidently is native, though no doubt it must occur in Southern Oregon also. There are more than 20 species of clover found in California. Probably all yield more or less nectar, although some, like the red clover, have corollas so deep that the bees cannot readily reach it.

From the appearance of the samples received, this cow clover has every characteristic of a valuable forage plant. Apparently it has never been brought to general attention and it may prove adapted to climatic conditions over a wide range of territory. Since it seems to thrive on alkaline soils it may prove valuable in many places where the better known varieties do not succeed well.

Perhaps if beekeepers living in that region would gather the seed and offer it for sale in small packets, it might serve to introduce it into other regions and increase the available nectar for beekeepers of other sections.—F. C. P.

## NEWELL, DEAN OF AGRICULTURE

It gives us real pleasure to announce that Dr. Wilmon Newell has been selected as Dean of the Florida College of Agriculture, Director of the Experiment Station and Director of the Extension Service, to succeed Dean Rolfs, who recently resigned.

Newell is one of the leaders among American entomologists and has always been much interested in beekeeping. As Plant Commissioner he was successful in eradicating citrus canker from Florida, work which attracted wide attention.

The Florida institution has recently been giving serious attention to beekeeping, with a course at the college taught by Frank Stirling and a force of inspectors under Newell to eradicate bee diseases. With Newell in his new position, we feel certain that work in all lines of beekeeping will be advanced just as fast as funds available will permit and interest on the part of Florida beekeepers will justify.

## NATURE OF THE BEE'S POISON

Formic acid has been popularly credited as the source of the poison in the sting of the bees. The following analysis, recently sent us by Mr. L. R. Watson, indicates that this common impression is in error:

### Composition of Venom in a Bee Sting

By F. Fleury

1. Compound of the indole series.
2. Quinoline.
3. Glycerine.
4. Phosphoric acid.
5. Palmitic acid.
6. Unsaturated fatty acid of high molecular weight.
7. Volatile fatty acid, probably butyric.
8. A non-nitrogenous fraction.

Jour. de Pharm. et de Chimie (7) 22 December 1, 1920), p. 438.

## FIRST ANNUAL MEETING OF AMERICAN HONEY PRODUCERS' LEAGUE

By H. B. Parks, Secretary

About thirty organizations were represented at the first annual meeting of the American Honey Producers' League.

The President, E. G. LeStourgeon, of San Antonio, Texas, called the meeting to order and H. B. Parks, Acting Secretary, reported on the activities of the League up to the present time.

B. F. Kindig, of East Lansing, Mich., Chairman of the Committee on Education, gave a very full report on the work done in Apiculture in the various State Schools. Dr. J. H. Merrill, of Manhattan, Kans., also a member of this committee, assisted Mr. Kindig in compiling this report.

The Bureau of Legislation, represented by C. P. Campbell, of Grand Rapids, Mich., gave an account of the activities of this Bureau in compiling and presenting a brief to the Chairman of the Ways and Means Committee of Congress, asking that a tariff of not less than 48c and not greater than 60c per gallon be placed on honey. Mr. Campbell stated that he had been assured by Hon. Rodney Fordney, the Chairman of the above committee, that there was but little doubt that this item would be placed in the regular tariff bill which will be voted upon early this summer. A number of minor activities of this bureau were reported, especially one in which there is a case between a beekeeper and a smelter company in Arizona. The League is planning, through its committees, to assist in the fighting of this case.

The most interesting occurrence of the meeting occurred the afternoon of February 15, when Clifford Muth, Chairman of the Special Advertising Committee, reported on their activities.

Mr. Wayne Calhoun, representing Proctor & Collier Advertising Agents, very briefly outlined an advertising program for the League, advising the papers in which the advertising matter would reach the greatest number of housewives, and exhibiting samples of the proposed advertisements.

The subject of the American Honey Producers' seal on each container of honey was discussed. It was the consensus of opinion that for some time the League should not insist upon the honey being so labeled, but allow the buying public to become familiar with the League seal before the seal should be placed upon the honey containers.

However the secretary already has application for seals from a very large number of honey producers who are League members. Mr. Muth suggested that we pledge the money for the advertising campaign at once. This met with the approval of those present, and after many spirited speeches and considerable exhorting on the part of Mr. F. W. Muth, of Cincinnati, the following amounts were subscribed:

| | |
|---|---|
| American Bee Journal | $ 300.00 |
| C. H. Weber, of Cincinnati | 500.00 |
| G. B. Lewis Co., Watertown | 400.00 |
| Texas Honey Producers' Ass'n | 700.00 |
| F. W. Muth Co., Cincinnati | 500.00 |
| A. I. Root Co., Medina | 1,000.00 |
| Wesley Foster, Boulder, Colo. | 150.00 |
| Elyria Enameled Prod. Co., Chicago | 200.00 |
| Wisconsin Beekeepers' Ass'n. | 200.00 |
| J. J. Wilder, Waycross, Ga. | 50.00 |
| Georgia Beekeepers' Ass'n | 100.00 |
| Michigan Beekeepers' Ass'n | 300.00 |
| Utah State Beekeepers' Assn. | 500.00 |
| Indiana Beekeepers' Ass'n | 100.00 |
| Texas Beekeepers' Ass'n | 100.00 |
| C. H. Wiley, Harrisburg, Ill. | 50.00 |

The Secretary and the Advertising Committee were instructed to obtain further subscriptions to the advertising fund, and it is very probable that between ten and twelve thousand dollars will be raised. The Executive Committee was instructed to place a contract for advertising which will consist of six one-quarter page ads in "Good Housekeeping," these ads to be backed up by articles on honey in the body of the magazine; also articles in farm and county papers published by three of the newspaper syndicates. In addition to this a recipe booklet is to be prepared for general distribution in answer to advertisement.

The officers were re-elected for 1921 and it was announced that the payment of dues made during 1920 would be applied on the present year.

The problem of raising additional funds for advertising was thoroughly discussed and Mr. A. L. Boyden suggested that we ask for two per cent of the value of last year's honey crop and Mr. H. F. Wilson, of Wisconsin, suggested five cents per colony. It was agreed that those soliciting for advertising ask that the beekeepers tax themselves either one or the other.

H. B. Parks was selected as Secretary-Treasurer of the League for the ensuing year and was required to give a bond in the sum of $10,000. The Committee instructed the Secretary to solicit contributions to the general expense fund of the League and to issue another number of the League Bulletin as soon as practicable.

The following associations have already voted to become members of the League:

Michigan Beekeepers' Association.
Montana Beekeepers' Association.
New York Association of Beekeepers' Associations.
Indiana Beekeepers' Association.
Tennessee Beekeepers' Association.
Wisconsin Beekeepers' Association.
Illinois Beekeepers' Association.
Kansas Beekeepers' Association.
Kentucky Beekeepers' Association.
Iowa Beekeepers' Association.
Nebraska Beekeepers' Association.
Chicago Northwestern Beekeepers' Association.
Texas Honey Producers' Association.
Texas Beekeepers' Association.
California Honey Producers' Association.
Utah Beekeepers' Association.
Colorado Beekeepers' Association.

## MORE SEEDS FOR TRIAL

Through the kindness of our correspondent in China, Mr. C. G. Golding, we have received another lot of seeds which we propose to send to our readers for free trial. The seeds which we offer now are Sesamum. Sesamum is widely grown in Asia for the oil which is secured from the seeds. Sesamum oil is one of the best vegetable oils available for table use. It is said to be free from any unpleasant taste and to congeal far less readily than olive oil. It is cultivated as far north as latitude 42 in Japan, and is said to succeed well in the milder regions of Victoria, Australia. It should be adapted to a large portion of America. The seeds are said to be very rich in oil, yielding from 45 to 50 per cent. Nearly a million acres of sesamum are grown in the Madras Presidency, India, with large areas in China, Japan, Africa, etc. It is also extensively grown in Turkey. It is reported to be a good bee plant.

We have also received from Daniel E. Robbins, of Payson, Ill., a limited amount of the annual sweet clover which has been attracting so much attention of late. We will send samples of this also as long as the supply lasts.

Persons interested should send stamp to cover postage, and write address plainly.

## SUPERS IN WINTER

By M. H. Mendleson

I notice that one of your subscribers in a late issue asks about leaving supers on in California. In my locations, where bees are sheltered from the winter and have the whole day sunshine, I leave my supers on with good results; but I leave the hive and supers full of honey for the winter, and they go through in good condition. I have always made a practice of leaving my colonies rich in stores for the winter, and that is one of the main requisites to give good wintering and successful production. So many extract so close at the close of the honey season that the bees have no chance to breed up strong with plenty of young bees to winter. Supers on with abundance of honey has always been a great advantage to me. California is the worst for moth, and bees can take better care of comb than the apiarist. For extra surplus combs a good fumigating house is a great convenience. Use carbon bisulphide. It is the most penetrating of any that I have used.

I contract my hive entrances from one to about three inches in length, according to strength of colony. I leave the opening in front of the cluster as a protection from robbers, should any weaken in strength.

California.

## THAT EARLY BLOOMING SWEET CLOVER

Great interest has been manifested in the new early blooming variety of sweet clover. The American Bee Journal has distributed many hundreds of free samples to all parts of America and some to foreign countries. Blooming as it does, ahead of the ordinary white sweet clover, we believe that it will prove to be a distinct addition to the honey resources of the country. The following article is copied from the Grundy County, Illinois, "Farm Bureau News":

"Grundy County sweet clover is a white blossom, biennial clover that grows to a height of three and one-half to four feet and matures an abundance of seed that ripens three weeks ahead of the common white blossom sweet clover.

Several outstanding advantages credited to this clover by those who have grown it, are: 1st. It grows to a good height for harvesting, but does not require clipping, thereby eliminating the hazard of killing. 2nd. It ripens early, ahead of weeds, and is ready to thresh and hull before small grain. 3rd. It is a heavy seed producer. 4th. It has superior soil building qualities. 5th. It is unusually hardy to withstand dry summers and hard winters.

This new sweet clover has been present in Grundy County, Illinois, for five years. Not having heard of it elsewhere, we have named it Grundy County sweet clover. The first year its varying habits were not noticed. The second year, when it blossomed and seeded, its unusual habits of shorter growth, earlier ripening and heavy seeding were observed but it was thought this might be due to local influences. When succeeding crops came on the variations from the common sweet clover became more evident, and since then a closer observation and more detail d comparison has followed.

There is a difference of nearly three feet, on an average, between the common, tall growing sweet clover and the Grundy County sweet clover. The Grundy County sweet clover was ripe for seed harvest July 15 this year, and the common sweet clover August 5, making a difference of just three weeks.

This new sweet clover branches thickly about a foot above the ground and is a heavy seed-producing plant, ripening seed quite uniformly. Seed was harvested on eight different farms in the county this year with yields varying from 5 to 14 bushels per acre. The early ripening habit of this crop makes possible the seed harvest before weed seeds and other seeds are mature.

There are several botanical differences between this and the common sweet clover in the color of leaf, shape of leaf, size of plant and size of seed. These were very noticeable when comparisons were made this year of the two clovers on the same farm, and same type of soil in different instances, and when the two clovers were on adjoining plots in one field.

The smaller size of the Grundy County sweet clover seed makes it practicable to sow less seed per acre. Tests made in the county this year indicate that 8 pounds of seed is sufficient.

The heavy residue in the form of 12 to 15-inch stubble, in addition to a large fleshy root, makes the crop valuable in its humus and nitrogen reinforcements of the soil.

The characteristics of Grundy County sweet clover make it adaptable to a wide usage and a crop that is practicable to grow for cash and soil building."

## WAX PRODUCT

By Harry Lathrop

I believe Dadants once published the statement that the wax produced in their various apiaries in a certain season was sufficient to pay for the labor of extracting the honey. This will serve to call attention to the importance of wax as constituting a part of the profits of beekeeping.

The writer has prepared quite a lot of wax for market by the use of the Hatch-Gemmel press, but I never could succeed in getting real bright, clean wax, and concluded there was some defect in my method. There are a great many handicaps in working with a small outfit. I have concluded that I will never use the press again.

For a small apiary this is my present plan: Take a strong, clean sugar barrel with the head out, dump into it well-drained cappings, bits of comb, old combs to be discarded, breaking them out of the frames preferably in cold, frosty weather. Have a tamper and keep pounding down the comb and bits of wax as you proceed to fill the barrel. You will be surprised to find how heavy this barrel will be when full to the top. I have just finished one that weighed 160 pounds net. It consists of about a bushel of cappings, the balance old comb of all descriptions, some badly moth eaten. When the barrel is full, head it up securely and ship to some factory to be rendered. Do this in the dead of winter and obviate all danger of spreading disease, as no bees are out foraging in cold weather. For larger apiaries I would have a good sized melting tank. I would heat up my cappings and scrap by a slow, steady heat. When ready I would dip clear wax out of the tank into heated molds such as a flaring tin bucket with about four inches of hot water in the bottom. In this way one would get a lot of nice wax at once without pressing. The balance contained in the tank after cooling and draining, would be tamped down in the barrel and shipped as before stated. This operation would be best performed in warm weather, and no spread of disease should occur from such practice. I consider the movement of manufacturers to do this work one of the best things that have happened for beekeepers of late.

Any ordinary beekeeper trying to save all his wax by the use of small and inadequate equipment has a job on his hands, and a dirty one. From now on such efforts will not pay.

Wisconsin.

## GEMS FROM THE PAST

Selected by C. W. Aeppler

Beekeeping is not an occupation in which one can easily become wealthy. It can be depended on to furnish a comfortable living, and perhaps enable a man to lay up a few thousand. Fortunately, however, the professional man's happiness bears little relation to the size of his fortune; and the man with the hum of the bees over his head finds happiness deeper and sweeter than ever comes to the merchant prince with his cares and his thousands.

—W. Z. Hutchinson.

Do not think you are rich when you have hived a lot of young swarms. Fewer hives with lots of bees in each one is better. —Hase (1771).

In order to be a beekeeper, one must use his head.

—J. L. Christ (1783).

A bee that has learned to rob will find it difficult to return to an honest living. —Langstroth.

Every insect provides a world of wonder; but in the case of bees, two worlds must have come together.

—Bonnet.

The more help a colony of bees requires in the spring, the more evidence is manifested that the owner is a poor beekeeper.

—Ziwansky.

# BEEKEEPERS BY THE WAY

Mendleson talking bees to a group of California beemen.

### A Successful Californian

For 50 years a beekeeper and for 40 years a Californian, M. H. Mendleson, of Ventura, is one of the best-known commercial honey producers in all America. He has owned as high as 2,000 colonies of bees at one time and has produced more than 100 tons of honey in a single year. For 30 years he has practiced migratory beekeeping, so there are few men who have had such wide experience as he. He was one of the first to discover the fact that to winter the bees with a big reserve supply of honey is the best insurance of a good crop the following year. Mendleson says he can get his bees through with 25 pounds of stores per colony but that he counts on leaving at least double that in each hive, and that it often pays to leave even more.

Mendelson was first attracted to California by the shipment of ten cars of comb honey to the New York market by the late J. S. Harbison. That was in 1878. At that time Mendleson was a young man keeping bees in New York. After seeing the Harbison shipment he decided that California was the place for him and we soon find him working for R. Wilkin at Sespe, where he remained for two years before starting out again for himself.

Because he has had such wide experience in every phase of honey production and has been so constantly successful, he is a popular speaker at conventions. The picture shows him talking bees at an outdoor meeting.

## FITTING THE ALEXANDER FEEDER

By John Protheroe

I have always been a firm believer in the advantages of the Alexander feeder. To me the bottle entrance feeder is an abomination. It has many objectionable characteristics. It is the cause of nine-tenths of the outbreaks of fighting in queen yards, where feeders of one sort or another have to be almost constantly employed. It is incurably messy; the best that one can do with it is to dip it in a bucket of water after filling, dry carefully, and wipe around the neck with a kerosened rag—a lengthy and tiresome operation. Theoretically, the wooden holder should always be dry and clean; practically, owing to some of the holes being a fraction too large, they manage to get into a puddly condition. The "shiny professionals" know all about it; wherever there is a leak or a messy bottle, there do they congregate, furtive, hairless, sneaking, parasitic rascals; starting up trouble and demoralizing respectable bees. The best that one can say for the bottle feeder is that with a large three-pint bottle and holes of exactly the right size you can get a continuous flow of small volume, instead of small regular doses given in the Alexander. In the case of hot sunshine the bottle is also liable to develop fermentation. Nectar naturally comes in doses, and not in a steady flow all night, so that the process is not copying nature. Nectar naturally comes with a rush in the morning and then gradually tapers off to nothing. If you wish to copy nature, that is how you should feed. So don't produce the "nature" argument against the Alexander. When preaching the advantages of the Alexander feeder, I have usually been met with the objection, "It is so unsatisfactory to fit. You cannot get the hive to rest evenly over the feeder." Now, that is just exactly what you can do; that is the strong point of the Alexander. It is possible to use it year in, year out, without spilling a drop. It is the cleanest and most easily refilled of all feeders, and undoubtedly the warmest for feeding in the cold weather of early spring. It can be used for rapid feeding in the fall, a purpose for which the bottle feeder is most inefficient. It can be used for getting reserve combs filled with syrup and sealed during slack times—a dangerous process for which you require an isolated, bee-tight feeder and no open covers. The large Canadian tank feeder is serviceable only for rapid work in the fall; further, it entails removing the hive cover, as does also the Doolittle feeder (with its soup of drowned bees). Taking it all round, there is no feeder like the Alexander. It lies snugly under the brood-nest, far from temptation to entrance robbers. When properly applied, it is absolutely clean and bee-tight.

The advantages of having hive-stand, floor-board, alighting-board, and feeder combined are obvious, so I make no apology for pointing out the merits of my design. European hives nearly all incorporate hive-stand, floor-board, and alighting-board in one piece. Americans have hitherto insisted on portability, and on the reversible feature of the floor-board—to my mind unnecessary—seven-eighths inch, with contracting device is perfectly good enough. And is it not a fact that manufacturers have paid too exclusive an attention to the needs of the cellar wintering community, to the disadvantage of those to whom portability is not as necessary as other features? The spread of large-scale beekeeping through the southeast makes it curious that the pattern supplied by dealers is still that designed for the cellars of the North.

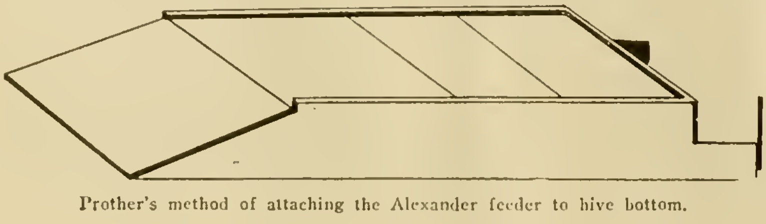
The combined hive-stand and alighting-board supplied at present as an extra is a poor sort of compromise. It certainly does not go with the reversible feature; it cannot fit both sides. It is not a close fitting, and it is liable to be jolted out of place; there is an objectionable gap just at the hive entrance. In my design you lose the three-eighths inch feature; but for the trivial sacrifice you gain the advantage of having permanent hive-stand with alighting-board, floor-board, and the most efficient feeder concentrated into one close-fitting hive part.

The design speaks for itself. The floor slides into grooves cut in the sides (as in the present reversible pattern). The feeder is held on the back projection either by a couple of upright metal strips nailed to the ends of the side pieces or by a board across. The board has one advantage in that when drawing the hive back over the feeder less accuracy is necessary.

There is an alternative to the design I enclose. In this the feeder is thrust through holes in the sides of the stand just large enough to admit it, the top of the feeder being flush with the surface of the floor and forming part of it. There are objections to this which make preferable the design that allows the hive to be slid back and forth over the feeder at will.

Virginia.

(While the Alexander feeder will do very well for stimulative feeding where queen rearing operations are under way, as described by our correspondent, a friction top pail with a few holes punched in the top, turned upside down in the super is far better for ordinary purposes.—Ed.)



Prother's method of attaching the Alexander feeder to hive bottom.

## HEARTSEASE

Would Mr. Pellett care to describe why "heartsease" is known otherwise as smartweed, while "hearts-ease" is a violet or pansy?

It seems to me that there is more than a hyphenated difference between smartweeds and pansies, at least when considered from a honey-yielding standpoint. The poetical version of the word makes it a good name for a farm and I have been considering it for such, but first I want to know which is the more generally accepted meaning of the term; whether it would signify peace and tranquillity or merely a place overrun by a certain rather noxious weed.

Illinois.

Heartsease indicates peace and tranquillity, but just why the common smartweed or lady's thumb should be called by that name I could never quite understand. There is no accounting for common names. Some common plants are known by a dozen different names, while the same name is applied to as many different plants in different localities.

The pansy (**Viola tricolor**) has long been known as heartsease, or preferably heart's ease, written in two words. As far as the hyphen is concerned, there seems to be no regularity in its use. The name is written as one word and as two words as above, and also with a hyphen, as applied to either plant.

In addition to the pansy, the name is applied to the wallflower. In Australia it is used in connection with still another group of plants, the **Gratiola.** Among beekeepers "heartsease" means the lady's thumb, or smartweed **Polygonum persicaria.** Weed though it be, it yields an abundant supply of fair quality honey. A good crop of honey tends to the peace and tranquillity of the beekeeper. In any case, it would seem that "heartsease" would be a very appropriate name for a farm home, especially if it be occupied by a beekeeper.—F. C. P.

## KEEPING COLONY RECORDS

A subscriber asks for information regarding the system of records kept by M. H. Mendleson, who is one of the most extensive producers of honey on the Pacific Coast. This query was submitted to Mr. Mendleson, who replies as follows:

"My records are kept something like the following:

Date of examination, health first; No. of colony, queen, age of, amount of brood if any, strength; amount of honey; a colony for swarms, etc. If I run for comb honey we cannot prevent swarming, and my locations are great for swarming, as a wet winter is followed with a long spell of stimulation before the honey flow commences. I have a column for record of date of swarms and to what terrace and number the swarm is located in the apiary. By so doing I know where to locate any particular colony or queen.

I have a separate book to keep a record of scale hive, which is an average colony; thermometer, barometer, and conditions of weather, etc.

The moving of bees, of late years, plays havoc with individual records, as thieves cause me such great losses that I have to move my bees away to the coast, where I can catch them. This is done after the sage flow is over; so then I take advantage of the bean flow, which commences about July 1 to 10, following wet winters.

As you are well aware, I am the pioneer in moving bees to the lima bean fields, as one favorable season I extracted 140 pounds of surplus per colony from the beans. This was an exceptionally favorable location. Many of the farmers are prejudiced against bees; so this favorable location was sold and I could not secure it again. There are other locations where I secured two good extractings, about 100 pounds per colony.

To return to records. If a person permanently locates his colonies of bees, a good system of records is a saving of time and a great satisfaction to the owner. Any particular colony in an apiary that needs attention, you don't have to hunt to find it. Your record will direct you to the number, and you will know the exact attention needed.

I have had as high as 900 colonies in one apiary, and in such a large apiary a record is a great convenience.

My Piru location used to be able to support (following a wet winter) 1,000 colonies, but many mountain fires during a series of dry years have killed out a great area of the sages, so that it will not support over 500 to 700 colonies now, or following a wet winter. ,

California.

## A VENTILATED HONEY HOUSE

In the Sunny South, where there are many warm days when it is necessary to work among the bees, we sometimes find honey houses partially screened to give free access to every breeze that blows. In our November, 1918, issue we pictured a honey house in West Texas which had an open strip clear around the building which was covered with wire cloth to keep out the bees, while freely admitting the air.

The picture shown herewith of a honey house on the plantation of W. W. Worthington, of Wayside, Miss., shows the ends covered with wire cloth, while the rest of the building is closed in the regulation way. These ventilated buildings are used for extracting, mostly.

## THE CORNELL SHORT COURSE

By Gove Hambridge

A large group of the beekeepers of New York State spent an instructive and enjoyable week at Cornell University February 7 to 12, in attendance at a short course for commercial beekeepers held under the auspices of the New York State Agricultural College. The week was crowded with lectures from 8 a. m. until bed time, and the writer of this does not remember getting quite so solid a block of information in any other single week of his life.

There were two types of lectures—those by experts in apiculture and those by experts in other branches of agriculture closely related to beekeeping, the latter being something of a new departure in courses of this sort. Dr. E. F. Phillips was the principal speaker. Beginning with "The Fall Period," he considered in successive talks "The Behavior of Bees in Winter," "Outside Wintering," "Cellar Wintering," "Symptoms of the Brood Diseases," "Spring Management," "Variations in Locality," "The Treatment of American and European Foulbrood," and "Variations in the Virulence of European Foulbrood." His talks were crowded with valuable fundamental data regarding the exact qualities of nourishment by weight that bees require at the various stages of their development, calories of heat in larval growth, and similar scientific underpinnings for sound practice. Most novel, perhaps, was his careful analysis of all the chief honey regions in the United States, with the effects of soil, temperature, rainfall, and elevation, on nectar secretion; and the results of his original investigations into the regional variations in the virulence of European foulbrood, in which he showed the effects of soil conditions as factors strongly affecting the disease.

G. S. Demuth was able to be present on one day only, during which he crowded in two rapid-fire talks on "The Honey Flow and Control," which kept pencils dancing across note books. George H. Rea admirably supplemented the discussions of Dr. Phillips with lectures on certain practical aspects of beekeeping: "Little Known Honey Sources of the State," "Requeening," "Wintering in New York," "Prevalence of Bee Diseases in New York," "Preparation for the Clover and Buckwheat Flows." His intimate knowledge of almost every corner of the State enabled him to correlate the practices of widely scattered beekeepers and present principles applicable to various regions.

Not the least interesting talks were those by experts outside the apicultural field. All of these talks centered on beekeeping and were valuable to the beekeeper, giving him accurate and authoritative information which he would not ordinarily obtain save by painful research. Professor G. H. Collingwood, for example, talked on trees, as sources of nectar, as windbreaks, etc.; Professor Robert Matheson on "Sources of Honeydew" (a very complete expose); Professor G. W. Herrick on "The Value of Bees in Pollenation"; Professor E. L. Worthen on "Soils and Their Treatment," especially as affecting nectar secretion; and Professor K. M. Weigand on "The Mechanism of Pollenation and Nectar in Plants." A. Gordon Dye, besides presiding at some of the sessions, gave a graphic account of the development and construction of his winter packing case, illustrating his talk with a complete little model.

Dr. J. G. Needham, as chairman, endeared himself to everyone by his inexhaustible humor and consummate skill in introductions. He also gave a talk on "The Society of Bees and Men," and there were other very enjoyable evening addresses by members of the Cornell faculty, including President A. W. Smith, Dean A. R. Mann of the College of Agriculture, and Professor A. A. Allen, the ornithologist. Professor G. W. Whitney, of Cornell, decidedly aided the spirit of solidarity by conducting group songs.

Four features stand out in the mind of the writer: the wide range of scientific data presented by Dr. Phillips; the valuable side lights given by authorities in related lines of activity; the indefatigable efforts of George H. Rea, resulting in a week that ran as smoothly as clockwork, and the cordiality of the University's spirit of co-operation toward the State beekeepers. To this must be added the fine spirit of mutual helpfulness and friendliness evidenced among those who attended.

The Worthington honey house is screened at both ends to provide a comfortable work room in hot weather

## INCREASING CONSUMPTION

By E. S. Miller

Those who attend bee conventions or who read the journals seem to be divided into two camps. There are the beekeepers whose desire is partly for entertainment and partly to learn of any new stunts in handling bees. On the other hand, there are the honey producers who are in the game for business purposes, and whose chief interest lies in marketing the crop. It must be conceded that the beekeepers are in the majority, but it is the producers who deliver the goods. However, there is no law to prevent a fellow from belonging to both parties. No good reason appears why a beekeeper should not be a business man as well.

For many years the pages of our bee journals have been devoted almost entirely to increased production of honey. The efforts of supply manufacturers and dealers and of government officials have been toward the same end until now, under prevailing conditions, the supply exceeds the demand. The present need is for increased consumption, to be brought about by more extensive and more judicious advertising and by better distribution. In my opinion this can be done most effectively by organizations of the producers themselves. For advertising and for general direction in the process of distribution, the American Honey Producers' League promises to be the most effective agency. I do not believe that it is wise or practicable for this organization to undertake the sale of honey, but it should encourage and assist the producers' selling agencies that are being established in various parts of the country. Such organizations will tend to eliminate some of the unnecessary costs between producer and consumer.

At the present time the honey bottler seems to be having his innings. But bottling is an expensive process and nearly doubles the cost to the consumer. It must be conceded that honey put up in glass is more attractive, but people do not buy it in this form for food, as a rule. They take it in homeopathic doses as a "medicine." Of course, the consumer "demands" the small package. He (or rather she) would buy it in thimblefuls if possible, but the final result is a much smaller consumption of honey. I believe that our advertising should call attention to the economy of purchasing in larger packages. If the consuming public can be induced to buy honey granulated hard in 5-pound and 10 pound pails it is by all odds the most practical and least expensive way of handling it.

Indiana.

## BEES AND FRUIT

The accompanying photographs were taken at the apiary of J. W. Snodderly, near Omaha.

Mr. Snodderly, some years ago, purchased 30 acres of hilly and bottom land near the Missouri River, with the idea of raising small fruit and truck. The Missouri, as it sometimes has the habit of doing, changed its course somewhat and took away a good portion of the farm. A succession of dry seasons helped to put Mr. Snodderly in bad financial circumstances. In the spring of 1918 he was induced by a sister to turn his attention to bees. At that time he had 14 colonies in boxes of various kinds. He joined the County Honey Producers' Association and began in earnest the study of the bee business.

In the spring of 1920 the apiary consisted of 27 strong colonies in modern hives. He increased to 46 colonies and produced 3,000 pounds of honey during the year.

## BEEKEEPERS AND ENTOMOLOGY

By Henry W. Sanders

In the February number of the American Bee Journal is the answer to a question as to whether beekeepers ought to study the vast and intricate science of entomology, and while the editor covered the matter very fully, there is one aspect of the case that has great practical importance, yet is seldom mentioned in the journals. The only textbook that we know of that deals adequately with the matter in question is Phillips "Beekeeping."

The matter referred to is the frequent comparisons that are drawn between the life and behavior of bees, and of human beings. This is exceptionally frequent in English books on the subject, but our American ones are by no means free from it. It is something that easily provokes wonder and amazement to point to the works and actions of a hive of bees with the idea in one's mind that they "think" just like we do, but even a cursory study of entomology will reveal the absurdity of such comparisons. Therefore, if it is asked whether beekeepers should study entomology, the reply should be given that studies of other individual orders, species or varieties of insects (however interesting) will not aid them as beekeepers, but that an understanding of the structure and general place in the creation of insects **as a group** will give them the key to much that is astonishing in their behavior, and will aid in the avoiding of incorrect ideas, for these latter always breed bad practices sooner or later, and the art of keeping bees is only successful as long as it follows closely to the natural laws that govern the life history and habits of the honeybee.

HONEY
FOR
SALE

Mr. Snodderly's advertising sign for attracting customers from passing tourists.

Maeterlink has dealt with the business from the philosophic standpoint, and tries hard to establish a common ground of consciousness between man and bee. How far he succeeds it is not for me to say. The point I do wish to emphasize is that humanity and bees present such a series of flat contradictions, such a contrast in modes of structure and life that we are physically unable to meet on the same plane of thought or motive. Let us look at a few of the main contrasts.

In structure we have our skeleton inside and a fleshly covering—the bee carries her skeleton outside. We are centralized with the brain in the head and our nerves centering there. The bee has her nerves scattered all over the body, uniting in "local brains" (ganglia), where the nerves meet. The fact that the ganglia at the head of the insect are rather larger is merely due to the presence at that point of the sense organs of eyes and antennae. The eyes of the bee are compound, and non-adjustable, one fact which alone might explain a vast difference in comparison with a being whose organs of vision are instantly focused as ours are.

Turning from structure to development, we find that the insect life is divided generally into three distinct periods, corresponding with the changes in metamorphosis. In the first, all the eating is done; in the second all the sleeping, and in the third all the breeding; this in contrast with our development, wherein we begin as perfect, though small, individuals, and grow larger, interspersing our eating, sleeping and breeding, throughout life. The bee is an anomoly through its communal development, but essentially the last or perfect stage of its life is really the breeding stage of the insect, greatly elaborated and complicated.

When we cut our finger it heals. The hand of the workman wears perpetually away, and as steadily is replaced from beneath. Our bodies contain myriads of cells that are at work repairing and replacing tissue all the time. The result is that until an injury or disease actually stops our essential organs, we live. An insect, however, wears out like a garment, and has no such renewal. There is something infinitely tragic and incomprehensible in the wondrous garments and beauty of many insects, who wear their splendors for but a day, and having bred, and laid their eggs, die.

In the honeybee we have a form of life which, with the ants and a very few allied species, takes the same relationship to the lower orders that man does to the warm-blooded, vertebrate animals. They display a highly complex organization, and a great elaboration of the simpler forms and processes of life. Within historical times they have not changed in the least, and their actions can be calculated with certainty if we know the surroundings and impulse that are acting upon them. The art of beekeeping, as expressed in the production of honey is strictly empirical, that is, it has resulted from the observing of these actions and stimuli, and the devising of apparatus, etc., to meet them. We do not, however, understand in the least the underlying mysteries, and we in all probability never shall.

Manitoba.

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## QUEEN INTRODUCTION

By C. E. Fowler

On page 57, January American Bee Journal, Allen Latham gives us a very good article on "100 Per Cent Introduction," but he doesn't say whether he means 100 per cent of queens in a week or a month or 100 per cent of the amount of time required or the financial advantage of the different methods of introduction. He hints at the advantages and disadvantages of different methods.

A few years ago I introduced 12 queens in 12 swarms of about 4 pounds of bees in each by the regular cage method without losing a queen; 100 per cent, but in a month's time five queens were superseded, leaving 58 1-3 per cent. Why they were superseded, I am like Dr. Miller, "I don't know," but I can guess. When a queen is laying 2,000 eggs a day and is mailed a thousand miles in a cage where she can't lay an egg and is put in the hive in the cage for a few days and can't lay any eggs, and the bees release her and think she looks nice and are well satisfied; but she cannot lay a regular supply of eggs for several more days, why should they not begin to worry and start a queen-cell and take a notion to destroy the queen? So I have studied up a new way of introducing queens which I think not only saves most of that 41 2-3 per cent but gives the queen about 4 days extra laying, which would equal one or two pounds of bees and some seasons of the year may be worth dollars.

I make two wire cloth frames and put one on each side of a frame of hatching brood, take the perforated tin off the cage and put it on one side of the brood on the side where the most bees are trying to get out.

In 24 hours there may be 1,000 bees hatched out and the queen has 1,000 places to lay, and if you let her out by taking the wire frames off she not only has 1,000 friends (more or less), but she has her laying machine in working order, and I think 100 per cent of your queens are safe from supersedure, but not safe from accident.

If a greenhorn looks in the hive every day and occasionally (if smoked at the entrance) the queen is on the lid and he puts it on the ground leaning against something, and then hunts for the queen in the hive and can't find her, and while he is looking for the queen she crawls off the cover and he leaves her in the grass, the 100 per cent is broken.

Allan Latham says a breeding queen should never be subjected to any other method than that of letting her loose upon combs of hatching brood, kept warm by artificial heat.

I tried that method once on a select untested queen and left the entrance open and never saw the queen again. 100 per cent—100 per cent. The queen would not be in a natural position, with nothing but hatching brood (I will say emerging brood) and artificial heat, especially if the heating apparatus was made by some amateur.

I am surprised that Latham should put the cages on the top of the frames. I always put them between frames in the middle, so the bees will keep them warm and get acquainted more easily. The frames I spread far enough so the bees can get on the wire of the cage and the cage resting on two nails pushed in the comb.

I made my frames of wire netting, 8 to the inch, and the bees can feed through and get acquainted more easily.

Some mosquito netting is 14 to the inch, and should not be used.

A friend of mine had foulbrood and I was helping him, and he killed the old queen against a small pear tree, and the swarm clustered on the tree, where the odor of the queen was located.

We scrubbed the tree with soap and water. The bees clustered again. We brushed them off and dumped them in the hive. Then we put carbolic acid on the tree, but they would cluster. He cut the tree down, then the bees tried to get into the wrong hive and got killed by the quart.

The next time I introduced queens I tried this way: I caught the old queen and killed her against the new queen cage, but never saw much advantage, and I hated to do it.

Now when I kill the old queen I make a hole in the ground with my toes and bury her so the bees cannot find the odor, as I have seen the bees find a new queen (in cage) in a shed and a hundred bees covered it in a few minutes. I don't know why they did it, but I had to hide the queen cages.

I have nothing against Latham, for I have used his queens and think they are very fine.

While talking about queens I want to ask Latham a question.

I bought some queens last year. I am not sure, but I think they were Latham's. It was 4 or 5 days before I put them in, and in one cage every bee was dead but the queen, and in another cage every bee was alive but the queen, and I noticed the queen was curled up, but I did not know why, so I put the live queen in with the live bees, and before I knew it one bee stung the queen to death and the queen curled up same as the other one.

Why did the bees sting the first one? Why the second one? It was perhaps my fault, for not introducing as soon as I got them. I only lost $3. Some queens are worth $10 for the extra amount of honey their bees store in one year.

New Jersey.

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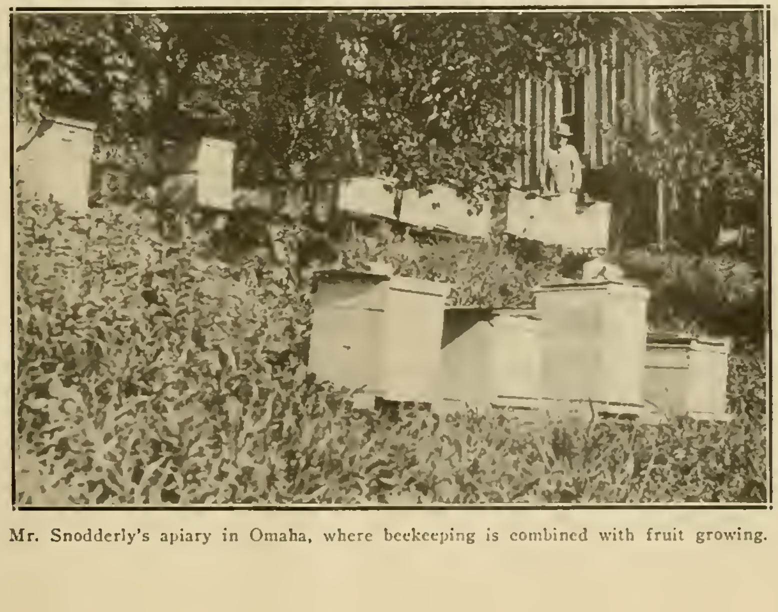
## LAVENDER

By Ph. J. Baldensperger

In your recent numbers you reproduced various articles on lavender. Here is what we have in the Alps:

1. **Lavendula Stoechas** (Linn). The bushes carrying this lavender grow all along the lowlands in porphyraceous soil, and going up the rocky hills to a hundred metres (330 feet) above the level of the sea, from Menton to Toulon, in the pine forests of the Esterel and Maures regions.

The bushes grow densely and are



Mr. Snodderly's apiary in Omaha, where beekeeping is combined with fruit growing.

sometimes a half meter (20 inches) or thereabouts, in height. The leaves are grayish or almost shriveling—or **frisees.** The dark purple flowers are in a dense ear or spike containing a dozen or more. The top of the spike is furnished with long bracts, same color as the flowers, or sometimes violet. I counted over 30 such spikes on a single plant. They flower from March to May and are visited by bees, though not to compare with the other kind. Their odor is very agreeable.

2. **Lavendula latifolia Spica.** This kind grows higher up—from two to four hundred meters (600 to 1320 feet) above the sea level, in calcareous soil —equally along the maritime line—some distance inland, except where the mountains fall directly into the sea, as about Monte Carlo or Beaulieu. The bushes are few and far between. The bush proper is very low, but the spikes grow up to nearly 75 centimeters (2½ feet) and with alternate and long, lanceolate, grayish leaves, sometimes more than 5 centimeters long (2 inches). The flowers grow in thin spikes, though elongated at the top of the stems, bluish in color. They flower about June and sometimes till the end of July. Bees visit them when other flowers are scarce.

The plants are sometimes mistaken for true lavender; but on nearer examination, and by the odor rather than by the flowers, they are recognized. They are also used for perfume, but only when the other kind is wanting.

3. **Lavendula officinalis, vers.** These are the queens of flower and perfume. The bushes are usually very densely covered with very odoriferous leaves, longer than in Stoechas but shorter than in Spica. As a rule, they grow only above 400 meters (1320 feet) above the sea level and up to 2,000 meters (6600 feet). They do not like the forests, as do the other two congeneres, but seem to be wholly independent and want the whole field for themselves. The bushes show any number of flower stems, growing up to half a meter, each stem crowned with a dense spike of bluish flowers, beginning to open towards the end of June. Though some plants may slip down till near the sea, they are never worth while for bee fodder. Whilst all the arid mountains are covered with millions of bushes, mostly growing wild, they give the most delicious honey of a yellowish amber or whitish color. The peasants gather them in donkey loads and sell them by the hundred kilos for the Grasse perfumes, or some enterprising peasant distils them, on the spot, near running water. This distilling is done in the open air, as during the long summer months, in our southern climate, there is never a drop of rain. An alembic (still) is set up, and the lavender is boiled then and there.

The prices vary very much. Before 1914 they were paid from 5 to 10 francs per hundred kilos (44 to 90 cents per hundred weight). In 1920 the peasants left everything to go for lavender, as some speculators paid them over a hundred francs per hundred kilos ($9 per cwt.). A good hand with a mule or a donkey to carry the bundles, can gather 150 kilos or over in a day. The mountain sides are so abrupt that not all can be reached—a good chance for the beekeepers—since they are cut in the honey season. Happily, there are, in some places, more flowers than hands to cut them and the bees are happy as well as the beekeeper.

In the Basses-Alpes, Vaucluse and other places, they are cultivated on a high scale for perfumery.

## UINTAH BASIN BEES

By Frank L. Arnold

Transcontinental tourists who traveled this summer from Denver to Salt Lake by the Pike's Peak highway may have noted an unusual honey flow in the two Utah counties of Uintah and Duchesne, two counties that have always been famous for the abundance and quality of their honey. These two counties lie in what is known as the Uintah basin, and are made up of a former Indian reservation lying in the Duchesne valley and of the land in the Ashley and Green River valleys. Here bee conditions are among the best in the United States, and have two unique features in the bee world. The average flow of honey is certain every year and the beekeeper on a small scale is encouraged to entrust his colonies to experts and to share in the returns rather than to care for them himself.

The country rolls in sweet clover and alfalfa bloom. Mr. Dan H. Hillman, President of the Uintah County Bee Association, said in July that he could not work fast enough to give his bees room; that he often had to put on as many as five supers, and that the Uintah Basin honey flow never was a failure, though it was often less than this year. This, according to Mr. Hillman, is the cardinal excellence of the country as a bee pasture. It offsets the long, cold winters, when only bees wintered in cellars do well, and there is much loss from spring dwindling. He, himself, has spent three winters in California, looking for a better bee country, but has been unable to find it, though he studied the Imperial Valley, the Los Angeles and San Luis Obispo districts with great care. California, according to him, often has a greater honey flow than these two Utah counties, but it often has an entire failure, while Utah is a surer average country. Even in the poorest season, the Uintah basin has an average of 87 pounds per colony, with some colonies producing as high as 120 pounds. Most summers there are tons of nectar going to waste and you can see miles of sweet clover bloom by the roadside and ten-acre tracts without a bee on them.

Of course, nearly everyone keeps bees, but the cattle man and the hay rancher are naturally not so expert in the work as the professional beeman. So it has been the policy of the county agent, backed up by the farm bureau, to encourage the small inexpert beekeeper to take his bees to an experienced beeman, who will look after them carefully and return a certain share of the profits to the owner. Thus Mr. Hillman took last year a lot of 20 colonies, hived in candy buckets, soap boxes, coal oil cases and other makeshift hives. He put them into movable-frame hives, which the owner paid for, cared for them through the season and returned to the owner 30 pounds per colony, and, like a good cattle man, was ready to make the old stock good.

This, Mr. Hillman thinks, is a fair contract between the expert and the inexpert ,and in such contracts he sees a necessary condition to making the Uintah Basin a banner bee country. Some foulbrood has been brought in from Salt Lake City, and only experts can control it. In like manner only experts can handle a colony so that it will produce its limit, and it is an old principle that a cobbler should stick to his last. Some people were never meant to work with bees, and never can learn.

With regard to the marketing of honey,Uintah Basin has still much to learn. It is mostly sold in 5-gallon cans and, though the automobile tourist will eventually want as much as that, it looks big to him for a first taste. There are no posters along the highway exalting the excellence of Uintah's sweet clover honey, and many tourists who stop at the public camps are apt to pass through without knowing that they are in a honey country. If they stop at a hotel they are pretty sure to get the honey on their hot cakes. It would be excellent advertising for the commercial clubs to present every tourist with a small jar of the honey. It would make him a life-long booster for the honey.

France has her wine always on the table, Normandy drinks cider like water, and the United States would do well to adopt the Swiss custom of the breakfast honey pot. Utah honey could easily become more famous than Utah celery. At Moffatt, near Duchesne, one of the best ranchers, with bees as a side issue, is C. W. Bodily. He and his wife are making money from bees and turkeys, though their chief object in life is a 100-acre hay ranch. Mr. Bodily has worked with bees ever since he was a child and says that never in the history of the world has there been honey like that which the bees gather from the sweet clover around Fort Duchesne. And you'll say the same if you taste of it. It often brings 50 cents a pound in Denver, and customers cry for it. The bees work on the sweet clover in preference to alfalfa, and the honey is less sharp than alfalfa honey and sweetens as it ages. People that never care for other honey, like it.

From his 100 colonies on July 27, Mr. Bodily extracted 60 cans, that is 3,600 pounds, and that was just the beginning of his season's work. His wife helps him in the uncapping of the comb, but her chief success is with turkeys.

The State Farm Bureau helped last year in the sale of Uintah honey. The bee men had contracted to sell their honey to a local firm at the Denver market price, less the cost of freight. The contract was not lived up to, and the Uintah bee men were feeling rather sore, when the county agent began to sell it for them through the other county agents of the State. The first sold in Coalville at $3 less than the local price for 5-gallon cans. It sold everywhere in the State, from Grouse Creek to Kanab, at a better price than the Denver market price which had been offered, although in every case it was lower than the local price and came into competition with honey from other parts of the State. Some of the honey even traveled to Oklahoma and, though it cost the buyer there $17.50, he sent back for two more cans. "Beats anything in honey I have ever eaten," was his comment. An agricultural college professor ordered five cans, thinking that there was a gallon in each. He was much surprised when his bill was over $50. However, as he was a botanist with much sympathy for bee men, he coughed up the cash cheerfully and his children are the happier for his carelessness.

Utah.

## CELL PRODUCTION

By H. Brenner

To receive the largest percentage of prolific queens it is important that the larvæ be supplied, from the earliest stage, abundantly with food. Take a comb with just hatching larvæ from the best breeders. Cut out single cells containing larvæ of the same age and fasten with hot wax to the top-bar of the empty frame, space the cells so you will have about 18 to the bar. Destroy with a toothpick the larvæ in the double cells and on the under side of the mid rib and give the frame to the cell-rearing colony. Prepare according to the strength of the colony another bar or two, and fasten in the same frame. If the colony is in the right condition for cell-rearing you will find the cells under the top bar started already when you insert the second bar. With this method the larvæ are never starving or without food. I take larvæ of the same age so the cells ripen at the same time. To prepare the colony for cell rearing, I make it queenless and do not bother it for three days. The third day I take away all the sealed brood, larvæ and eggs, destroy the queen-cells and leave in the center, between two frames of sealed brood, space for the cell frame. I have then a queenless colony without any larvæ or eggs, ready to supply any number of queen-cells with larval food, waiting for the cell bars. In using artificial cell-cups I found that the bees eat up the given royal jelly first and clean the cups before they take care of the transferred larvæ. In doing this work some of the larvæ perish. I advise beekeepers to read Pellett's book on queen-rearing.

Texas.

## ODDS AND ENDS

### Where Bees May Be Kept

Whereas some country yieldeth one fruit, some another; some beareth one grain, some another; some breedeth one kind of cattle, some another; there is no ground, of what nature soever it be, hot or cold, wet or dry, hill or dale, woodland of champian, meadow, pasture or arable; in a word, whether it be battle or barren, which yieldeth not matter for the bee to work upon. —Chas. Butler. The Feminine Monarchie, 1623.

### Gypsum for Alfalfa Yields

A recent article in "Cement, Mill and Quarry" calls attention to the great value of agricultural gypsum in increasing the yield of alfalfa in the west. Who knows but that the addition of some fertilizer may result in increasing secretion of nectar from alfalfa in the east? Our experiment stations are yet in their infancy.

### A Live Organization

The Vigo County, Indiana, beekeepers have an organization which keeps things moving. They hold summer tours and winter meetings, and never allow interest to lag. They held a short course of two days at Terre Haute on February 24 and 25, attended by about 60 beekeepers. The instructors were C. O. Yost, Jay Smith, E. W. Atkins, beside local beekeepers, including R. B. Davis, of Staunton, Indiana, and the officers of the Association.

William A. Hunter was re-elected President, Frank Teel Vice President and George E. Osburn was chosen to succeed Mr. Rainbolt as Secretary.

### Adulterated Honey

Relative to the article in the Chicago Evening American by Brice Belden, M. D., stating that honey is one of the things most extensively adulterated, I wish to say that the editorial in the February issue, is timely. Some action must be taken when charges like these are made. On December 28, 1920, I received a letter from Frank C. Pellett, containing the same information as published in the Journal. The same day I wrote to the American and to Dr. Belden through that paper asking for a confirmation of this statement and offered the aid of the League to help in rectifying this situation. Up to this day (Feb. 4, 1921), I have received no reply to these letters, neither have the letters been returned.

As I have no such information or accusations from beekeepers in the Chicago district, nor was any such statement made at the December, 1920, meeting of the Chicago Northwestern Beekeepers' Association, I believe it is the duty of the American to make a statement defending the article mentioned. If they have proof of their statement, then the beekeepers should, through the League and the bee journals, correct this situation. If the paper cannot show that adulterated honey was commonly sold, then this paper owes to the beekeepers and honey dealers of America an apology. H. B. Parks, Secretary American Honey Producers' League.

### Bee Stings Kill Team

Danville, Va.—Two horses belonging to a Patrick County orchard company were stung to death, and Mrs. Audrey Rickman was rendered unconscious when attacked by a swarm of bees. The horses, harnessed, overturned a beehive in their restlessness, and brought out the bees.

Goaded by stings, the team ran amuck and upset 18 more bee stands, with the result that a cloud of many thousands settled on the beasts which, becoming entangled in the harness, fell helpless to the ground.—News Item.

### A Good Start

I had one colony on 10 Langstroth frames and 6 shallow extracting combs to begin with. I have transferred onto Jumbo frames with 1½-inch spacing. I have increased that one colony to six colonies, all on Jumbo frames, in Dadant hives. July 4 I bought a 3-pound package of bees and queen. My first nucleus was made June 25, and the last one on July 10. I bought queens to introduce to the new divisions. As to the amount of honey: I have taken 101 sections, the lightest weighing 14¾ oz. net, and the heaviest weighing 16¾ oz. net. Then I have 80 pounds of extracted honey, beside frames of honey that weigh 38 pounds that I saved to feed if it were necessary. I have now 7 rousing big colonies, with their combs solid full of honey for winter, and have stored away 56 shallow extracting combs for use next spring.

This has been my introduction to the bees, and I have had royal good time, beside a profitable one, having sold 73 sections for 50 cents each, and 50 pounds extracted honey for 50 cents a pound.

I am afraid spring is a long time in coming.

Yours truly,
Ransom A Race.

Massachusetts.

### Honey From City Shade Trees

In the city of Washington there are about 10,000 basswood trees within a radius of two miles of Iowa circle. An enterprising beekeeper, Harold L. Kelley, of Forest Glen, Maryland, moves his bees into the city for the flow and gets an average crop of about 35 pounds per colony of basswood honey.

There are many cities where basswood, maples or other trees which yield nectar freely are sufficiently plentiful to afford a good flow of nectar for a short period. It sounds like a novel idea to move the bees to the city for a honey flow, but Mr. Kelley seems to have found it profitable.

### Shart Courses for Beekeepers in Western Washington

During January and February there were eight schools or short courses for beekeepers in Western Washington. They were held at Wishkah, Elma, Olympia, Puyallup, Seattle, Shelton, Everett and Bellingham. There was a total of nearly 1,000 present at all the short courses.

The Seattle school was best attended, there being nearly 400 people who were interested enough to remain for five-day sessions and two night sessions. And the interest was intense throughout the entire eight short courses.

The principal instructors were Dr. A. L. Melander, of the State College at Pullman; W. L. Cox, of Elma, the bee inspector for Gray's Harbor County; Fred Mandery, of Tenino, the bee inspector of Thurston County, and George W. York, of Spokane.

### Hives Too Close Together

"When in New Zealand, I told the beekeepers there that I thought their method of placing colonies so close together was largely responsible for the spread of foulbrood. My experience since, in the United States, confirms me in that opinion."—W. S. Pender, in Australasian Beekeeper.

Since the keeping of colonies too close together is already responsible for the loss of young queens, by mistakes in entering the hive upon the return from their wedding flight, we see an additional objection in the above statement from a man who has very practical knowledge. The colonies should always be so placed that the bees may readily recognize their own hive.—Editor.

### More Census Reports

There were 47,285 colonies of bees in Oregon in 1909, as compared with 45,254 in 1919. The 1919 honey crop was 929,566 pounds, or a per colony production of 19 pounds.

Indiana reports 87,045 colonies in 1919, as against 80,938 in 1909. No report on honey yields given.

Colorado had 63,253 colonies in 1919 as against 71,434 colonies in 1910.

### Tennessee Joins the American Honey Producers' League

Tennessee did herself proud on the question of joining the League at the January meeting. The Secretary had just given out a financial statement showing that the association had only $29 in the treasury. There were not more than 60 members present. But when the circular letter from the secretary of the League was read, urging all State Associations to join, Mrs. Grace Allen made a motion to join. It was seconded.

Our editor, who was present, made a few remarks upon the advisability of the beekeepers of the United States being united for the purpose of advertising their honey, to foster extension work, fight diseases, standardize equipment, get pure food laws in the States, keep every one posted in regard to prices and markets, etc. A wave of enthusiasm ran through the meeting. Mr. Ben G. Davis offered $25 of the $100 needed, in his and his father's names. The balance of the subscription was put together in a few minutes. Glory to Tennessee! If the beekeepers thus support an American League, success in steady honey prices will be assured. All we need is to unite, as the citrus producers did.

### Beekeeping in Canada

The Canadian Government has seventeen apiaries on the various experimental farms scattered over the Dominion. In the January number of the Horticulturist and Beekeeper, F. W. L. Sladen states that records of the returns from these apiaries are available since 1912. The average per colony production per year varies from 18 pounds in the least profitable apiary to 133 pounds in the most profitable one. It is presumed that the difference is largely one of location. An average of 133 pounds per colony for a period of eight years is certainly a good record. However, the fact that all the apiaries in the 17 different locations in all sections of Canada averaged 63 pounds indicates that Canada offers very favorable conditions for honey production.

### Revival of Split Sections

So little has been said about split sections of late that many of the younger generation of beekeepers have never heard of them. It is possible to get a very fine article of comb honey by the use of the split section, since the foundation is held in place between the split edges of the wood. Since some extra labor is necessary in their use, they have never proved popular.

We were greatly surprised to learn that a patent has very recently been issued to Harry C. Hartman, of Braddyville, Iowa, on split sections. It seems that no application for patent on such use of the sections for comb honey had ever been filed.

We are interested in learning just when split sections were first used and where they first appeared.

Mr. Hartman has also received a patent on a vertical metal support in the center of the brood-frame to be used in place of wires. It is somewhat similar in effect to Dr. Miller's wood splints, except that it is attached to the frame both at top and bottom.

### Essex County Meet

The Essex County Beekeepers' Association was formed January 20, at Newark, N. J..

C. W. Feiganspan, of Newark, was elected Honorary President; Rev. A. S. Zimmerman, Newark, President; Julius Meier, Newark, First Vice President; B. B. Osborn, Kearney, Second Vice President, and Chas. Ledig, Irvington, Secretary-Treasurer.

J. H. M. Cook, of Roseland, and Rev. Zimmerman gave interesting talks, assisted with lantern slides.

At the second meeting, held February 10, C. H. Root, of Red Bank, and E. G. Carr, Deputy Bee Inspector for the State, both gave very instructive talks.

The next meeting was held Thursday, March 10, in City Hall, Newark.

Chas. Ledig, Secretary.

### League Notes

J. J. Wilder, of Waycross, Ga., editor of the Dixie Beekeeper, represented the League in the Southern Tariff Congress held at Atlanta, Ga., January 27-29. Mr. Wilder was successful in having honey placed on the list of agricultural products which that body is recommending for tariff to the National Congress. Mr. Wilder reports that the interests allied in this Congress were glad to receive the aid of the beekeepers.

Clifford Muth, Chairman of the Special Advertising Committee, reports that his committee is progressing nicely and has made arrangements for the advertising and has secured a greater part of the funds required.

C. B. Baxter, of Leavenworth, Kans., and Corona, Calif., writes that he is getting material together on standardization and finds that he has a big and important job. He further states the League is creating much favorable comment and action on the West Coast.

The California prune growers are to spend $325,000 in 1921 advertising prunes. How's that, fellow beekeepers? Is the League going to get your support?

C. W. Kitchen, of the Bureau of Markets, Washington, D. C., writes that he desires to co-operate with the League's Marketing Committee and asks the aid of the League in giving the honey producers of America a better market report.

H. B. Parks, Secretary.

### Use of Propolis

Propolis is recommended for ladies to use on their faces in place of cold cream, to putty up the wrinkles before putting on rouge and powder. The old bachelor beekeepers, readers of the Air Line Review, are sure to be taken in by this treatment.—B. B. Gum, Hot Town, La.

### Bees Winter Well in Ohio

Bees went into winter quarters in good condition following a heavy honey flow. The winter was very mild, the temperature dropping to zero only once. I winter on summer stands, with three or four inches of packing on top of the frames, and have never lost a single colony so protected. We have woods to break the wind. C. W. Chambers, Brookville, Ohio.

### British Columbia Beekeeping

A new publication entitled "Beekeeping in the Interior of British Columbia," has recently been issued by the British Columbia Honey Producers' Association. It contains sixteen pages, illustrated with photographs and drawings. The methods of honey production best suited to the conditions of the Province are briefly and clearly outlined. Our Canadian friends set a good example, which may well be followed by organizations of beekeepers elsewhere.

### Bees and Honey

"Bees and Honey" is the name of a little publication issued every little while by the Alameda County, California Beekeepers' Association. It seems that whenever the secretary has important news for the members, the paper is issued. It is a novel idea and interesting to all bee fanciers. The last issue, dealing with the annual convention of the State Association which met with the Alameda folks, contains 32 pages and has the appearance of quite a pretentious bee magazine.

California has some live ones in the honey producing business. Ever since the days of Harbison, they have insisted on producing more honey than anybody else, and not only do they produce good honey, but they advertise the fact in a way to make the rest of the world sit up and take notice.

### Chicago Beekeepers Meet

On February 15 the beekeepers of Chicago and vicinity held a meeting at the Chicago Business College Hall. The hall proved too small for the number that attended, so it became necessary to divide the company and hold two meetings. It is expected that a permanent organization will result and that beekeepers of that vicinity will hold frequent meetings in winter, with apiary demonstrations in summer.

# THE EDITOR'S ANSWERS

Questions are answered in order received. As we receive more questions than we can answer in space available, two or three months sometimes elapse before answers appear.

### Repairing Combs

1. (a) In replacing drone-comb is it best to fit in pieces of worker-comb singly and let the bees straighten out crushed cells, or can foundation be fitted in? (b) Is it true that brood-comb should be cut out every 4 or 5 years, as some claim that bees become smaller, owing to a lining accumulated in cells by hatching of the young bees?

2. Bees wintered in cellar with a queen-excluder on hive to keep out mice, should the cover be pulled back to give ventilation, and how far?

3. How soon can bees be taken out of cellar? WISCONSIN.

Answers.—Yes, fit pieces of worker combs in the spaces formerly occupied with drone-comb. Otherwise the bees will rebuild drone-comb. It is better to have some pieces of already built comb, as they can be adjusted better than pieces of foundation.

b. No, it takes 15 years or more to make cells too small for workers.

2. We would give a certain amount of ventilation according to the strength of the swarm. We have wintered bees in the cellar with the entire top open. Give them an inch or so at least.

3. Take bees out of cellar at the first warm days of spring. Dr. Miller said "when the first soft maple bloom is out." Do not take them out on cold days

### Oregon

1. There is a late flow here now (Sept. 11). The bees are coming in with a white pollen all over their bodies. Could you tell me what it is?

2. If I feed the colonies short of stores about the last of September would much of the honey be used in brood-rearing?

3. How many extracting colonies could one man keep successfully (keeping bees only)?

4. About how much honey does one colony require here for winter stores if they are wintered in double-walled hives, medium strong colonies. On the average it goes 10 degrees below zero.

5 How late should brood be reared to prevent spring dwindling?

6. There is about one pound of real dark brown honey (cappings) in each hive. Please tell me what it is. OREGON.

Answers.—1. We are not acquainted with the flora of Oregon. You are better placed than we are to find the plant on which your bees gather that white pollen. If you find it, just mail us a plant, root, stem and blossom, and we will do our best to give you its name.

2. If you feed at once as large a quantity as they will take readily, they will not do much brood-rearing. It is when you feed slowly, a little at a time, that the bees do much brood-rearing

3. An active man might take care of 500 to 700 colonies, if things are conveniently arranged.

4. Better figure on 30 to 40 pounds of honey for a colony to reach from one crop to the other, unless you have plenty of bloom yielding honey in spring, which is rather exceptional.

5. Brood should be reared as long as bees fly freely every day. The quantity lessens from day to day at the approach of cold weather.

6 That dark honey may be honeydew. Send us a sample of it.

### Locations

1. Having had some experience with bees, I intend to move to some place where I can embark in the bee business. Can you give me any information as to Colorado, Southern Utah, Southern California, or Texas?

2. In Mr. Frank C. Pellett's book, "American Honey Plants," does he give the location of all the different plants? MINNESOTA.

Answers.—1. Colorado, Utah, California and Texas are the best State for bees, but you must go there and make your selection for locations, for there are good and bad spots in all those States A trip in either of them will give you the necessary information.

2. "American Honey Plants" gives the location of the different plants and also gives a list of the honey plants of each State.

### Flight of Queen

1. Does a laying queen take exercising flight? A queen breeder has told me he does not believe in cutting a queen' wings, as it prevents her from taking exercising flights.

2. When keeping royal jelly from one season to another, must the larvæ be picked out? MARYLAND.

Answers.—1. No, a queen never flies except when she mates, at the age of 6 to 10 days, or when she goes out with a swarm. Tell

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Quality is first—save time when you put your goods together, by getting supplies that are accurately made. Service is next—no delays when bee supplies are ordered from my factory.

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Send for my new price list.

Closing out all Langstroth and Wisconsin hives and supers. Also Langstroth triangular top-bar frames and eight-frame D. T. supers for 4x5 sections. Will sell at cost price. Write for quotations.

CHAS. MONDENG

146 Newton Ave. N. and 159 Cedar Lake Rd. Minneapolis, Minn.

that queen-breeder to get better informed.

2 I can't see any use in keeping royal jelly from one season to another. But when you do keep any, you should, of course, remove the larvæ. If you don't, they will either get cold and die and decay, or they will eat up your royal jelly and then die anyhow.

### Honey for Candy

How long should honey be boiled for use in queen candy? I notice in Professor White's article, in October number, that the time seems to have been lengthened since Dr. Phillips' experiments a few years ago.

CALIFORNIA.

Answer.—The bacteriologists and entomologists have warned us for some time past of the necessity of boiling honey for a half hour, when it is used to feed bees.

Dr. Burton N. Gates, Bulletin No. 75, Department of Agriculture, 1908, page 29, "Bee Diseases in Massachusetts," wrote:

"It is safe to feed honey to bees only when it has been vigorously boiled for at least a half hour. . . . "

Dr. E. F. Phillips, "Treatment of Bee Diseases," Bulletin 442, Department of Agriculture, 1911, page 17, wrote:

"Honey can safely be used for feeding bees, provided it is diluted with at least an equal volume of water, to prevent burning, and boiled in a closed vessel for not less than one-half hour, counting from the time that the diluted honey first boils vigorously." This authority repeats the same recommendation in Bulletin 1084, of the same Department, "Control of American Foulbrood," dated March, 1920.

On page 340 of the October number of this magazine, Dr. White wrote: "When the spores from the scale material were suspended in water and heated to boiling point (212 F.) they were all killed in 11 minutes. A half hour or more may be necessary when they are in honey"

In our own work, "The Hive and Honey-Bee," Langstroth Revised, we have recommended for years, paragraph 795, "when either honey or beeswax is heated to kill the germs of foulbrood, to keep the liquid at the boiling point for a couple of hours at least."

A thing that we did not know until lately, though we may have simply overlooked it, is that the bacilli die more quickly in hot water than in hot honey. See paragraph above from Dr. White. It behooves all queen-breeders to rather overdo the heating of honey, for nothing will hurt a queen-breeder's reputation more than to have it thought that he is careless about such a matter.

### Fence For Apiary

I am living on the outside of town, but in the city limits I have only one neighbor near me. I am trying hard not to interfere with anybody. I have at present 78 colonies and am thinking of increasing to 150. I have begun to make a high board fence and thinking of having a high fence all around them. There is no shade in the bee-yard yet. Would it be too warm in summer to have an almost tight fence around them? Would you think that the city could compel me to move the bees? I have 5 lots where I have my bee-yard, so I am not too near the road.

WISCONSIN.

Answer.—It would probably be rather warm in the summer to have a tight board fence all around your bee-yard. But this is not indispensable. A wire netting 10 or 12 feet high would be just about as efficient as a tight fence. Bees will not fly through a mesh one-half to one inch in diameter. At least such a mesh is sufficient to induce them to fly above it, so they get out of the way of passing teams, etc. So we would suggest that you build a tight fence only on the windy sides and use netting on all other sides. This will avoid making the yard too hot in summer. We have seen such netting in use in Peoria, with very good results.

To sweeten a mean neighbor, give him a jar of honey occasionally. It may seem hard to do it the first time. But you will see his face brighten, and the second time you give him some he will be quite a different man.

To prevent trouble with neighbors and passers by, you should never handle your bees without smoke Never allow any one to jar a hive unless it has been previously smoked, at the entrance first, and over the combs when opened. There is no necessity for cross bees. If some colony is unreasonably cross, change the queen in the spring as soon as you can get one. Keep only pure Italian bees. They are much more gentle than the common or black bee, or the hybrid. Make it a point to have gentle bees.

As to the city compelling you to move your bees, that is out of the question. They can have you fined, if your bees do any damage. People who get stung by them may obtain damages. But no law can be passed making bees a nuisance within a city. It has been tried before. But you should keep your bees in such a way as not to make them obnoxious to any one. It can be done by following these suggestions.

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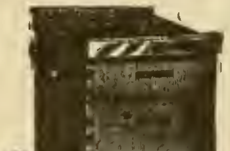

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# CLASSIFIED DEPARTMENT.

Advertisements in this department will be inserted for 5 cents per word, with no discounts. No classified advertisements accepted for less than 35 cents. Count each initial or number as one word.

Copy for this department must reach us not later than the 20th of the month preceding date of issue. If intended for classified department it should be so stated when advertisement is sent.

## SWEET CLOVER SEED

ANNUAL WHITE SWEET CLOVER SEED —The new forage plant that will grow from 4 to 8 feet high and bloom and mature seed in 90 days. Our seed was grown at Ames, Iowa, and is first-class seed, hulled and scarified. We have only a small quantity to offer, put up in 1-ounce packages, at $1 each, postpaid.
Colorado Honey Producers, Denver, Colo.

BEST quality white sweet clover seed, raised on my farm in Nebraska, cleaned and scarified, at $12 per bushel. In less quantities 25c per pound. Frank C. Pellett, Hamilton, Ill.

## BEES AND QUEENS

Lower Price. Top Quality. Atwater's Honey.

EARLY QUEENS—Beginning to ship about May 20, 3-banded Italians; don't monkey with poor queens; get something worth while. One untested queen, $1.50; 6 for $8; select tested, 1 $3; 6 for $15. See prices for bees in the February and March numbers of the American Bee Journal.
J. W. Bittenbender, Knoxville, Iowa.

CARNIOLANS for season of 1921. Gentle, prolific; wonderful honey gatherers. Circular and prices free. Alfred Hann,
Box 81, Glen Gardner, N. J.

ITALIAN QUEENS—Three-banded, select untested, guaranteed. Queen and drone mothers are chosen from colonies noted for honey production, hardiness, prolificness, gentleness, and perfect markings. Price, May and June: $1.50 each, 12 or more $1.25 each. Send for circular.
J. H. Haughey & Co., Berrien Springs, Mich.

FOR SALE—Queens—Limited quantity, price $1.25 each. One-third books order for June delivery, balance one week before delivery.
Willard A. Friend, R. 2, Box 112, Bedford, O.

PURE ITALIAN QUEENS, $2 each.
F Barber, Lowville, N. Y.

BY RETURN MAIL—Tested Italian Queens, $2.50 each. We guarantee safe arrival, satisfaction and *no disease.*
J. W. K. Shaw & Co., Loreauville, La.

FOR SALE—Three-frame nuclei, with leather-colored Italian queen (frames with brood and honey and about 2 pounds of bees), $10 each, by express, not prepaid. Delivery from May 15 J. S. Morales,
115 Vermilyea Ave. New York City, N. Y.

QUEENS ON APPROVAL—Bees by package or colony. Have your order booked now. Send money by May 1. A. M. Applegate,
840 Main St., Reynoldsville, Pa.

FOR SALE—Three-banded Italian queens ready June 1. Day old virgins, 55c each. Select untested, $1.50 each; 6, $8; 12, $15; 50, $60. Nuclei with queens, 2-frame $7.50; 3-frame $10.50. No disease; satisfaction guaranteed and correspondence answered promptly.
A. E. Crandall, Berlin, Conn.

MR. BEEKEEPER—If you enjoy preparing supers and removing honey, then you will be wise to head your colonies with my vigorous Italians. See larger add elsewhere.
Herman McConnell, Robinson, Ill.

FOR SALE—A limited number of leather colored Italian queens, the kind that gets the honey. L. C. Keet, in 1919, produced 40,000 pounds of honey from 200 colonies.
Geo. B. Howe, Sackets Harbor, N. Y.

QUEENS ON APPROVAL—Bees by package or colony. Have your order booked now. Send money by May 1st.
Birdie M. Hartle, 924 Pleasant St.,
Reynoldsville, Pa.

FOR SALE—Nuclei and queens. See our display advertisement.
Cotton Belt Apiaries, Roxton, Texas.

FOR SALE—Unsurpassed Italian queens, ready June 1; untested, $1.50; 6, $7.50; 12, $14; 50, $55; 100, $105. Tested, 1, $2.50; 6, $13.50. My queens are actually laying before they are sent out.
J. D. Harrah, Freewater, Oregon.

BEES from my queens would not excel at an exhibit, but they are hard to beat any place else. Circular tells more about them.
R. V. Stearns, Brady, Texas.

FOR SALE—Limited number of three-frame nuclei, pure three-banded Italians with tested queens only. For April delivery. No disease. Inspection certificate. Satisfaction or money back guarantee. Price $9.
Geo. R. Mitchell, Booneville, Miss.

FOR SALE—Three-banded Italian bees and queens, April and May, untested queen $1.50, tested $2.50; 2-lbs. bees $4.50. Add price of queen wanted. Safe delivery and satisfaction guaranteed.
J. L. Leath, Corinth, Miss.

FOR SALE—Hardy northern bred Italian queens and bees, each and every queen warranted satisfactory. For prices and further information write for circular.
H. G. Quirin, Bellevue, Ohio.

WONDERFUL QUEENS at wonderful prices; no complaints last year. Untested, $1.50; tested, $3; virgins, 50c.
F. M. Russell, Roxbury, Ohio.

THAGARD'S ITALIAN QUEENS—My 3-banded are "bred for quality"; try them and be convinced. Circular free.
V. R. Thagard, Greenville, Ala.

GUARANTEED ITALIAN QUEENS AND BEES. Orders filled day received. See larger add elsewhere. Dr. White Bee Co.,
P. O. Box 71, Sandia, Texas.

PACKAGE BEES and nuclei, also Italian queens. No disease in this section. Years of experience in shipping bees. For prices and terms address
Allenvile Apiaries, Allenville, Ala.

HEAVY LAYING Italian queens that produce hustling 3-banded workers. Untested, $1.25; tested, $2. Safe delivery and satisfaction guaranteed. There is no disease in my apiaries. Order now and get them on time.
P. M. Williams, Ft. Deposit, Ala

FOR SPRING DELIVERY—One good Italian queen, 1 Hoffman standard frame emerging brood, 1 pound live bees, price complete $6.50, f. o. b. Bordelonville. Queen introduced, mated, laying enroute; loss in transit replaced if noted on express tag by agent; no disease in State. References given. Orders booked, May delivery, one-fifth cash. Orders filled in rotation. Successor to J. F. Archdeken,
Jess Dalton, Bordelonville, La.

MOTT'S NORTHERN BRED ITALIAN QUEENS—Select untested, $1.50; 6, $8.50; 12, $15. Select guaranteed pure, or replace, $1.75. Select tested, $2.50 each. Plans "How to Introduce Queens, and Increase," 25c. E. E. Mott, Glenwood, Mich.

FOR SALE—Pure Italian queens and nuclei. One untested queen, $1.50; 12, $15. Tested queens, $2.50 each. Nuclei, 2-frame nucleus, $5; 3-frame, $6.50. Add price of queen wanted to price of nucleus. Frank Bornhoffer,
Rt. 17, Mt. Washington, Ohio.

BEES AND QUEENS from my Carolina apiaries, progeny of my famous Porto Rican pedigreed breeding stock.
Elton Warner, Asheville, N. C.

FOR SALE—Golden or 3-banded virgins, 60c each, or $6 per dozen; safe arrival.
R. O. Cox, Rt. 4, Luverne, Ala.

SWARTS' Golden queens produce golden bees of the highest quality. Untested $1.50 each, 6 for $8; tested, $3. Satisfaction guaranteed.
D. L. Swarts, Lancaster, Ohio, Rt. 2.

BEES—2-pound packages, with queens from our best breeders. 3-band strain; 1 package and queen $5.50; 25 or more, $5.25 each. One-fourth cash books your order. Safe arrival guaranteed. Promptness and efficiency our motto. Caney Valley Apiaries,
J. D. Yancey, Mgr., Bay City, Texas.

DAY-OLD ITALIAN QUEENS—High quality, low price, satisfied customers. Safe arrival guaranteed in U. S. and Canada. Safe introduction Prices: 1, 75c; 12, $7.20; 100, $60. Write for circular early.
James McKee, Riverside, Calif.

BEES BY THE POUND—Also pure-bred queens. Booking orders now for delivery after March 15. Everything guaranteed.
Brazos Valley Apiaries, Gause, Texas.

FOR SALE—Black bees, 3 lbs. and queen for $6.25, parcel post prepaid. One-fourth down, balance just before shipping. Can ship beginning April 10.
Carl L. Wilson, Mount Vernon, Ga.

FOR SALE—Leather colored Italian queens, tested, until June 1, $2.50; after, $2. Untested, $1.25; 12, $13. Root's goods at Root's prices. A. W. Yates,
15 Chapman St., Hartford, Conn.

HARDY ITALIAN QUEENS, $1 each.
W. G. Lauver, Middletown, Pa.

FOR SALE—Honey Brook Farm can supply you promptly, beginning April 10, with the very best three-banded Italian queens, one grade, select untested, $1.50 each, or $15 per dozen. Tested, $2 each, straight; ready April 1. Should you find some queenless colonies this spring, send me your order for a young queen to save them. I will not disappoint you. I have the bees and can deliver the goods. Pure mating, safe arrival, and satisfaction guaranteed.
Jasper Knight, Hayneville, Ala.

1921 PRICES on nuclei and queens: 1-frame nucleus, $3; 2-frame nucleus, $5; 3-frame nucleus, $6.50; without queens, f. o. b. Macon, Miss.; 5 per cent discount on lots of 25 or more. Untested queens $1.50 each, $15 per doz; tested queens $2 each, $22 per doz. No disease; inspection certificate with each shipment. Safe arrival and satisfaction guaranteed in U. S.. Queens sold only with nuclei.
Geo. A. Hummer & Sons, Prairie Point, Miss

WE want to please you. Our reliable three-banded queens and bees will be ready May 1. All bees are shipped on a standard frame of brood and honey. 1-lb. package bees, no queen, $3.25; 2-lb, $4.50; 3-lb. $6.75. One frame nuclei, no queen, $2.75; 2-frame, $4. Queens, untested, $1.50 each. One-fourth down will book your order.
Oscar Mayeux, Box 15, Hamburg, La.

FOR SALE—Bees for strengthening purposes, 3-frame nuclei of hybrid or black bees on frames containing brood, at $5.25 f. o. b. Lyons, Ga. No queens included; none for sale. Will be able to start shipping April 20. No disease; safe arrival guaranteed if express agent notes loss on express tag. One-third cash with order. Book your orders at once, as number of nuclei for shipment will be limited.
Otto Diestel, Elza, Ga.

FOR SALE—Utopian quality Italian queens, the kind that satisfy. May 15 to June 10, untested, $2 each. After June 10, untested, $1.50 each. 6, $8. Virgins, 90c each; 6, $4.75.
Utopian Apiaries, Amboy, Minn.

THE ITALIAN QUEENS OF WINDMERE are superior three-banded stock. Untested, $1.50 each, six for $8; tested, $2.50 each; select tested, $3. Bees by the pound; write for prices. Prof. W. A. Matheny,
Ohio University, Athens, Ohio.

FOR SALE—Golden Italian queens, untested, $1.50 each, dozen $14. Bees by the pound a specialty. Write for prices on bees.
E. A. Simmons, Greenville, Ala.

FOR SALE—Queens and bees, Italians and goldens, $1.50 each, $15 per dozen; 1 lb. bees, $5, 2 lbs. bees, $9. If queen is wanted with bees add the price of queen. Safe arrival and satisfaction guaranteed in United States or Canada. Cash or certified check must accompany all orders where parties are not known or satisfactorily rated.
Graydon Bros., Rt. 4, Greenville, Ala.

WE are now booking orders for early spring delivery of two and three-frame nuclei, with untested or tested queens. Write for prices and terms. We also manufacture cypress hives and frames.
Sarasota Bee Co., Sarasota, Fla.

THREE-BANDED ITALIANS only, that have been bred to a high standard of excellence. I never had any disease in my apiary. Safe arrival and satisfaction guaranteed. Untested queens: 1, $1.50; 12, $15. Tested queens: 1, $2.25; 12, $25.
Jul Buegeler, New Ulm, Texas.

FOR SALE—Three-banded; Italian queens untested, $1.50 each; 6, $7.50; 12, $14. Select untested, $1.75 each; satisfaction guaranteed.
W. T. Perdue & Sons,
R. No. 1, ort Deposit, Ala.

FOR SALE—Root's strain of golden and leather-colored Italian queens; bees by the pound and nuclei. Untested queens, $1.50 each; select untested, $2 each; tested, $2.50 each; select tested, $3 each. For larger lots write. Circular free.
A. J. Pinard,
440 N. 6th St., San Jose, Calif.

NUCLEI FOR 1921—Now booking orders for 1921 delivery. Italian nuclei (with queen), $6.50 each. Hybrid bees, with pure Italian queen, $5.50 each. Terms, one-third down with order. No disease. Safe arrival and satisfaction guaranteed.
A. R. Irish, Doctortown, Ga.

THREE-BAND BREEDERS from one of the heaviest honey-gathering strains in the State. $10 each. Delivery May 15.
A. V. Small, Augusta, Kans.

WE are booking orders for our golden Italian queens for spring delivery after April 15. Untested queens, 1, $1.50; doz., $15; select untested queens, 1, $1.75; doz., $18; virgin queens, 1, 75c; doz., $9; tested queens, 1, $3; doz., $36 Safe arrival guaranteed.
Tillery Brothers, Georgiana, Ala.

FOR SALE—Large, hardy, prolific queens: 3-banded Italians and golden; pure mating and safe arrival guaranteed. We ship only queens that are top notchers in size, prolificness and color. Untested, $2 each; 6, for $11; 25 for $45; tested queens $3 each, 6 for $16.
Buckeye Bee Co., Box 448 Massillon, Ohio.

BOOK YOUR ORDERS for QUEENS now—Goldens, $2; tested, $3; banded, $1.50; tested, $2.50; six or more, 10 per cent less.
Clover Leaf Apiaries, Wahoo, Neb.

EDSON APIARIES now booking orders for queen bees for delivery during season of 1921. Prices: One untested queen, $1.25; 50 untested queens, $57.50; 100 untested queens, $100. Orders filled in rotation; first shipments March 1, 1921.
Edson Apiaries, Gridley, Calif.

PURE ITALIAN QUEENS—Golden or leather colored, packages and nuclei; 1 untested queen, $1.50; 6, $7.50; 12, $13.50; 50, $55; 100, $100; virgins, 50c each; packages, 24 and under, $2.25 per pound; 25 and over, $2 per pound; nuclei, 1-frame, $4; 2-frame, $6; 3-frame, $7.50; queens extra. One-story 10-frame colony with queen, $12.
Golden Star Apiaries,
R. 3, Box 166, Chico, Calif.

BEES AND QUEENS from my New Jersey apiary
J. H. M. Cook,
1Atf 84 Cortland St., New York City.

PACKAGE BEES AND PURE ITALIAN QUEENS—Booking orders now for spring delivery. Circular free.
J. E. Wing,
166 Schiele Ave., San Jose, Calif.

HIGH GRADE ITALIAN QUEENS—Send for catalog.
Jay Smith, R. 3, Vincennes, Ind.

BEES BY THE POUND, ALSO QUEENS—Booking orders now. Free circular gives prices, etc. See larger ad elsewhere.
Nueces County Apiaries, Calallen, Texas,
E. B. Ault, Prop.

## HONEY AND BEESWAX

Lower Price. Top Quality. Atwater's Honey.

HONEY—15c per pound.
Walter Reppert,
Gen. Deliv., Shreveport, La.

FOR SALE—Very fine quality basswood-milkweed (mostly milkweed) honey in 60-pound cans.
F. W. Sowinski, Bellaire, Mich.

FOR SALE—Gallberry honey in cypress barrels; will sell for best offer.
J. G. Puett, Americus, Ga.

FOR SALE—White clover comb honey; also extracted in 10-lb. pails.
W. L. Ritter, Genoa, Ill.

FOR SALE—Finest grade honey, in 10-lb. pails; same quality as bottled, $2.40 per pail in single pail or case lots of 6. Also in glass jars of 1 pound, 1½ pounds and 3 pounds. Packed and guaranteed to carry safely anywhere. Prices on application.
Merton Church, Highland Park, Ill.

FOR SALE—Choice clover extracted honey. State quantity wanted.
J. D. Beals, Oto, Iowa.

FOR SALE—Best quality clover-basswood extracted honey; two 60-lb. cans in case.
Gelser Bros., Dalton, N. Y.

FOR SALE—Louisiana honey.
Arthur Kuersten, Burlington, Iowa.

FOR SALE—Well ripened extracted clover honey, 20c per pound. Amber and buckwheat extracted 17c, in 60-lb cans. Five-pound pail clover $1.25. Buckwheat and amber $1 per pail. Light amber in barrels 12½c per pound; also have a dozen cases buckwheat comb at $5 and $6 per case of 24 sections.
H. G. Quirin, Bellevue, Ohio.

FOR SALE—Choice white clover extracted honey, $20 per case of 2 60-lb. cans, f. o. b. Holgate.
Noah Bordner, Holgate, Ohio.

FOR SALE—Choice light amber honey in 60-lb. cans; also in 10 and 5-lb. pails. Please write for price and sample.
F. W. Luebeck, R. 2, Knox, Ind.

FOR SALE—Extracted honey. Write for prices.
A. L. Kildow, Putnam, Ill.

FOR SALE—Honey. Immediate shipment f. o. b. New York, in 60-lb tins: Calif. white orange, 19c lb.; Calif. white sage, 16c lb.; white sweet clover, 14c lb.; Calif. L A. sage, 13c lb.; West Indian L. A., 10c lb.; West Indian L. A., 10-lb. tins, 6 per case, 15c lb.
Hoffman & Hauck, Woodhaven, N. Y.

NEW HONEY. NEW PRICES—Supply your customers, finest alfalfa-clover honey, extra strong cases, $11.50 for one 60-lb. can, $21.60 case of 2, all f. o. b. here. Write for prices large lots. Two carloads sold; plenty on hand.
E. F. Atwater, Box 37J, Meridian, Idaho.

WANTED—Helper in beeyard. Give age, experience and wages wanted on basis of board furnished.
Mathilde Candler, Cassville, Wis.

WANTED—Comb and extracted honey.
The L. H. Snider Apiaries, Auburn, Ind.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendering.
Fred W. Muth Co.,
204 Walnut St., Cincinnati, Ohio.

## SUPPLIES

Lower Price. Top Quality. Atwater's Honey.

FOR SALE—200 new 10-frame Lewis white pine extracting supers; painted; new white frames, wired, full M. foundation; perfect workmanship, $5 each.
Francis Jager, St. Bonifacius, Minn.

SAVE BIG MONEY—Bargain supply catalog free.
R. Kramske, 1104 Victor St.,
St. Louis, Mo.

FOR SALE—New hives and frames made to order. Let me save you money. Satisfaction guaranteed.
F. D. Bowers, Sugar Grove, Pa.

FOR SALE—45 8-frame supers, K. D.; never been used, $55; 30 wood and 7 wire queen excluders, slightly used, $24. Ten Stirling covers with inner covers, nailed and painted, $20. Everything as good as new; $85 takes everything.
Earl H. Conrad, Lamoille, Nevada.

FOR SALE—200 absolutely new 10-frame hives complete, consisting of hive-bodies, tops, bottoms, tin rabbets, nails and Hoffman self-spacing frames knocked down, in lots of 5, $14; 200 full-depth supers with frames, $1.20 each; 500 lbs. of medium brood-foundation at 78c per pound
A. Irish, Doctortown, Ga.

HONEY EXTRACTORS at half price; compulsory sale. Write for particulars.
Seaman, South Connellsville, Pa.

FOR SALE—33 one-half depth supers with frames and 6 without frames, for 8-frame hives. These supers are white pine and dovetailed and in good condition; used but little, $25 takes the lot.
A. B. Marchant, Jesup, Ga.

FOR SALE—Full line of new and second-hand Jumbo and Langstroth bee supplies at modest prices. Send for complete list.
The Hoffman Apiaries, Janesville, Minn.

WANTED—To quote special prices on queen cages in quantity lots, to breeders. State quantity.
A. G. Woodman Co., Grand Rapids, Mich.

SAVE MONEY on your sections, shipping cases, tin and glass honey containers, etc. Our free price list tells you how.
The Rattray-Hamilton Co., Almont, Mich.

WRITE FOR PRICES on my cypress beehives and supplies.
J. Tom White, Dublin, Ga.

FOR SALE—Good second-hand double-deck comb honey shipping cases for 4¼x4¼x1⅞ sections, 25 cents per case, f. o. b. Cincinnati; terms cash with order.
C. H. W. Weber & Co.,
2146 Central Ave., Cincinnati, O.

FOR SALE—Good second-hand empty 60-lb. honey cans, two cans to the case, at 60c per case, f. o. b. Cincinnati. Terms cash with order.
C. H W Weber & Co.,
2146 Central Ave., Cincinnati, O.

SEND us a list of goods wanted and will quote you lowest prices. We are the money-saving house. Price list free. Try us.
H. S. Duby & Son, St. Anne, Ill.

## WANTED

Lower Price. Top Quality. Atwater's Honey.

WANTED—Bees in colonies, comb and extracted honey.
Frank Coyle, Penfield, Ill.

WANTED—Brood foundation mill. State condition and price.
The Henseler Apiaries, Marshfield, Wis.

WANTED—Apiary on shares or to buy, by two experienced beemen. Address,
L, care American Bee Journal.

WANTED—Extractor; will pay cash; 100 Langstroth frames, $6.50.
Lorenzo Clarke, Winona, Minn.

WANTED—To exchange bees and queens for Hershiser wax press; same must be in good condition.
A. B. Marchant, Jesup, Ga.

WANTED—Comb honey; also 10 stands of bees.
A. K. Reed, Barnett, Mo.

WANTED—Beeswax; also old combs and cappings to render on shares.
F J. Rettig, Wabash, Ind.

WANTED—Beeswax. At present we pay 34c per pound in cash and 36c in trade for clean yellow average wax, delivered Denver.
The Colorado Honey Producers' Association,
Denver, Colo.

WANTED—200 or less colonies of bees for spring delivery. Any style hive or box. Remembering 10c honey is in sight for 1921.
A. W. Smith, Birmingham, Mich.

WANTED—Bees, with or without location.
F. W Pease,
1717 Blake Boulevard, Cedar Rapids, Ia.

WANTED—Beeswax, old combs and cappings for rendering on shares. Also wax accepted for trade. Top market prices offered.
A. I. Root Co., Council Bluffs, Iowa.

WANTED—Your order for "Superior" Foundation. Prompt shipments at right prices.
Superior Honey Co., Ogden, Utah.

## SITUATIONS

Lower Price. Top Quality. Atwater's Honey.

WANTED—Position by experienced beekeeper; can furnish diploma and give references.
Dimitri Petrechenko,
P. O. Box 325, Crum Lynne, Pa.

WANTED—Work at an apiary as helper, by Catholic. State wages if possible.
C. Prescher, 143 Bowery St., New York City.

WANTED—One experienced man and students, clean habits, able-bodied and willing workers, as helpers with our more than 1,000 colonies. Opportunity to learn the business from A to Z; 1920 crop 122,000 pounds; theory also. Write immediately, giving age, height, weight, habits, former employment, experience, references, wages, photo, all in first letter.
E. F. Atwater, Meridian, Idaho.
(Former Special Field Agent in Beekeeping, U. S. Department of Agriculture).

WANTED—Two young men, able-bodied, willing to work, clean in body and mind, who want to learn beekeeping and are willing to exchange faithful services for instruction from a man with almost forty years of extensive experience in beekeeping, board and some financial remuneration. Have twelve apiaries.
R. F. Holtermann, Brantford, Ont., Canada.

WANTED—Man with some experience to work with bees coming season. State age, experience and wages wanted, based on our furnishing board.
The Rocky Mountain Bee. Co.,
Box 1319, Billings, Mont.

WANTED—One experienced man, and students or helpers, in our large bee business; good chance to learn. Modern equipment and outfit, including auto truck; located near summer resorts. Write, giving age, height, weight, experience, reference and wages wanted.
W. A. Latshaw Co., Clarion, Mich.

WANTED—Two comb-honey men for season of 1921. Give experience, age, and wages expected.
B. F. Smith, Jr., Fromberg, Mont.

## FOR SALE

Lower Price. Top Quality. Atwater's Honey.

FOR SALE—15 8-frame hives, empty; 13 8-frame supers; 5 hive stands. All painted and in good shape; used 2 years; no disease. Will sell all at a bargain. Will furnish inner fixtures if wanted.
John Hendricks, Zeeland, Mich.

FOR SALE—300 new Lewis beeware beeway sections, 77 section holders, separators, followers, springs for ten supers. Price $10.
J. M. Suliber.
5425 Minnesota Ave., St. Louis, Mo.

FOR SALE—"Superior" Foundation (Weed process). Quality and service unexcelled.
Superior Honey Co., Ogden, Utah.

FOR SALE—Brand new 6x10 Excelsior printing press, types, rules, for cash. Some bee supplies, magazines. Offer on magazines.
Edwin Dahlquist, North Branch, Minn.

FOR SALE—Too many bees in town; will sell 40 colonies; also 1 No. 15 Cowan extractor. If interested write.
Geo. F. Schilling, State Center, Iowa.

FOR SALE—35 stands of bees. Ten hives are standard, 25 are sectional hives. All painted and 10-frame. 35 section supers; 25 extracting supers with drawn combs, all for $375. or best offer. Buyer to ship same.
L. A. Schwob,
1340 Merchant St., St. Louis, Mo.

FOR SALE—One 10-inch foundation mill, 2½ inch rolls, nearly new; can save cost of same in first 100 pounds foundation made. Also 6-inch mill, 2-inch rolls, in good condition.
W. D. Wright, Altamont, N. Y.

FOR SALE—20 10-frame used dovetailed hives in good condition; 300 Hoffman frames, some with good extracting combs, the balance good starter left from cut-out comb honey. All in good condition. No disease.
B. A. Manley, Milo, Iowa.

FOR SALE—Six colonies in 10-frame Standard hives, with supers, at $10 each, f. o. b. Tupelo. Also five new hives at half price. Write.
Ben G. Lumpkin, Tupelo, Miss.

FOR SALE—Lot of new supplies, Lewis make; sections, foundation, hives, supers, covers, etc., at bargain prices. If interested, write for complete list.
C. C. Brinton, Bloomsburg, Pa.

FOR SALE—During the Mexican revolution, while unable to work on my ranches, I bought a few colonies of bees as a pastime. They have done wonderfully well, and I now have 200 good, strong colonies. As conditions have improved so much that I can again go back to work, I cannot give them needed personal attention, so will sell at a bargain. Good location, new equipment, no disease, and I own or control other localities suitable for outapiaries. This is a good opportunity to enter and develop a new field. Address
J. H. White, Tuxtepec, Oaxaca, Mexico.

FOR SALE—Owner wants use on one of our outside warehouses, so we must move this stock; slightly dusty and shopworn: 1-story 8-frame hives, packages of 5, $15. Also a few 10-frame, $17.50. Offer good only as long as this stock lasts.
A. G. Woodman Co., Grand Rapids, Mich.

FOR SALE—30 colonies of bees in 10-frame hives spaced 9 frames to the hive. Shipment to be made about June 1, after they are unpacked. Also write for prices on what you may want in bee supplies.
F. J. Rettig, Wabash, Ind.

FOR SALE—Cedar or pine dovetailed hives; also full line of supplies, including Dadant's foundation. Write for catalog.
A. E. Burdick, Sunnyside, Wash.

## MISCELLANEOUS

Lower Price. Top Quality. Atwater's Honey.

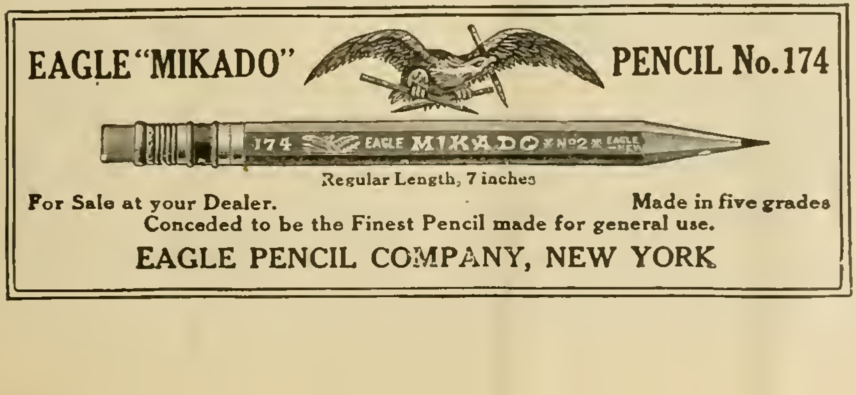
FOR SALE—Silver Spangled Hamburg Cockerels and eggs; rare old violin.
Elias Fox, Union Center, Wis.

BLACK SIBERIAN HARES—Enormous sizes, delicious meat and beautiful fur. Write for information and prices.
Siberian Fur Farm, Hamilton, Canada.

GRANULATED HONEY SLIPS—100, 20c.
Dr. Bonney, Buck Grove, Iowa.

DR. MILLER'S BEE SONGS are in "Songs of Beedom.' Ten songs for 20 cents, postpaid; 2-cent stamps taken. Also Teddy Bear souvenir postal cards, 10 for 10 cents. Address Geo. W. York, Box 84, Spokane, Wash.

WANTED—Old bee magazines. We have several customers who wish to complete their files of American Bee Journal and other magazines relating to beekeeping. The early volumes are especially desired. State what you have and price wanted in first letter.
American Bee Journal, Hamilton, Ill.



**EAGLE "MIKADO" PENCIL No. 174**

Regular Length, 7 inches

For Sale at your Dealer. Made in five grades

Conceded to be the Finest Pencil made for general use.

**EAGLE PENCIL COMPANY, NEW YORK**

# QUEENS

Write for our catalog of high grade Italian queens. Pure mating and safe arrival guaranteed.

Prices for 1921

| | |
|---|---|
| 1 to 4 inclusive | $ 3.00 each |
| 5 to 9 inclusive | 2.90 each |
| 10 or more | 2.80 each |
| Breeders | 12.00 each |

**JAY SMITH, Route 3**
**VINCENNES, IND.**

## THREE BAND AND GOLDEN QUEENS

that produce hustling bees. Bred to fill the supers. Our breeding stock produced 400 pounds surplus honey in 1920. Our breeding yards are several miles apart. We breed from the very best non-swarming, gentle, long-lived, prolific strains of bees and drones that thirty years' constant work can produce and money can buy. No disease. Satisfaction guaranteed.

| | |
|---|---|
| 1 Untested | $1.75; 12, $1.50 each |
| 1 Tested | $3.00; 12, $2.75 each |

**DR. WHITE BEE CO., Sandia, Texas**

Not the best in color or the gentlest, but mothers of colonies that bring in the honey. My circular tells more of my queens. Prices in line. Also a few more package bees to spare.

**R. V. STEARNS**
**BRADY, TEXAS**

# QUEENS
## THREE BAND ITALIANS

Order now for early delivery. Untested, $1.25, Select Untested, $1.50 each

**D. W. HOWELL, Shellman, Ga.**

# FOR SALE

**IF YOU WANT THE CHEAPEST, BUY THE BEST**

I am prepared to furnish for the season of 1921 twenty-five hundred two and three frame nuclei of my bright 3-banded Italian bees, headed with young, vigorous queens. These bees are free from disease, and safe arrival guaranteed. Hoffman frames wired and on full sheets of foundation; very few combs over two years old. I am booking orders now. One-fourth or one-half cash with order, balance before shipping.

Two-frame, $4.25; three-frame, $5.25. If queens are wanted, add $1.25 each.

After May 5th I will be ready to mail queens at the following prices: Untested, single $1.50, six for $8, twelve for $15. Tested, $2.50 each. Select tested, $3.50 each. Write for prices for large lots.

**A. B. MARCHANT, Jesup, Ga.**

**Reference: Merchants and Farmers Bank of Jesup.**

# TENNESSEE-BRED QUEENS

**Forty-nine Years' Experience in Queen-Rearing**
**Breed Three-Band Italians Only**

| | Nov. 1st to July 1st | | | July 1st to Nov. 1st | | |
|---|---|---|---|---|---|---|
| | 1 | 6 | 12 | 1 | 6 | 12 |
| Untested Queens | $2.50 | $12.00 | $22.00 | $2.00 | $10.00 | $18.00 |
| Select Untested | 3.75 | 13.50 | 24.00 | 2.25 | 12.00 | 20.00 |
| Tested | 3.50 | 20.00 | 35.00 | 3.00 | 16.00 | 30.00 |
| Select Tested | 4 00 | 22.50 | 40.00 | 3.50 | 18.50 | 35.00 |

Select tested, for breeding $7.50

The very best queen tested for breeding $15

Capacity of yard 6000. I sell no bees by the pound or nuclei except with high priced tested and breeding queens

Queens for export will be carefully packed in long distance cages, but safe delivery is not guaranteed

**JOHN M. DAVIS, Spring Hill, Tenn.**

Five colonies of your stock produced 2660 finished sections—the best one 616 finished sections
JOHN M. BIXLER, Corning, Iowa, February 1, 1921

# FOREHANDS' QUEENS. They Satisfy, Why?

Because of 28 years of experimental work with both queen breeding and honey production.

With breeding and selecting of imported queens, I have reached a standard which is ideal. Queens as good, but none BETTER. Why experiment? Take advantage of the life experience of my breeders.

OUR SERVICE STATION

We are ready to serve you at all times, whether you desire queens or advice. Let us help you with your bee problems. All questions are cheerfully answered.

I breed three-band Italians only.

| November 1 to June 1. | 1 | 6 | 12 |
|---|---|---|---|
| Untested | $2.00 | $ 9.00 | $16.00 |
| Select Untested | 2.25 | 10.50 | 18.00 |
| Tested | 3.00 | 16.50 | 30.00 |
| Select Tested | 3.50 | 19.50 | 36.00 |

Orders booked now for spring delivery. One-fourth the full amount with order and balance when shipment is desired. Pure mating, safe arrival and satisfaction guaranteed. Write for circular and large order discounts. Shipment to foreign countries at receiver's risk.

Bees in 2-pound packages, 1, $6; 25 or over, $5.80; 50 or over, $5.40; 100 or over, $5. Without queens.

Will begin shipping bees as early as weather will permit.

**N. FOREHAND, Ramer, Alabama**

**Established 1885**

Beekeepers should send for our new catalog, free. Beehives made of white pine. Root Co.'s old standby make of supplies. Order early. Beeswax in exchange for supplies or cash.

J. Nebel & Son Supply Co.,
High Hill, Mo.

# ITALIAN BEES

at before the war prices

**O. E. TIMM, BENNINGTON, NEB.**

# PAINT WITHOUT OIL

**Remarkable Discovery that Cuts Down the Cost of Paint 75%**

**A Free Trial Package is Mailed to Everyone Who Writes**

A. L. Rice, a prominent manufacturer of Adams, N. Y., discovered a process of making a new kind of paint without the use of oil. He named it Powdrpaint. It comes in the form of a dry powder, and all that is required is cold water to make a paint weather proof, fire proof, sanitary and durable for outside or inside painting. It is the cement principle applied to paint. It adheres to any surface, wood, stone or brick, spreads and looks like oil paint and costs about one-fourth as much.

Write to A. L. Rice, Inc., Manufacturers, 23 North St., Adams, N. Y., and a free trial package will be mailed to you, also color card and full information, showing you how you can save a good many dollars. Write today.

# Florida Queens and Bees

Two-frame nuclei with queen, $6 each. Tested queens, $2 each. Selected tested, $3 each.

This golden and three-band Italian stock I am offering has predominated and reproduced itself in the Sand Ridge section of Central Florida for 30 years.

**DIXIE BEEKEEPER**

A 32-page monthly publication now two years old, devoted to beekeeping and its possibilities, as well as the general interest of beekeepers here in Dixie, $1 per year. Sample free.

**WILDER'S CYPRESS HIVES** are durable and satisfactory. A full line of beekeeper's supplies at low prices.

Write for catalog.

**J. J. WILDER, Waycross, Ga.**

PAT JULY 30, 1918

# C.O.BRUNO NAILING DEVICE

*Made for the Huffman Brood Frames.* A combined Nailing, Wiring and Wedge Clamping Device. Has been tried and is guaranteed to do accurate work.

PRICE $7.50

Complete directions for operating are furnished with each device.

Manufactured by C. O. BRUNO
1413 South West Street, Rockford, Illinois

**SHE-SUITS-ME** queen-bees, prices for 1921: Untested Italians, $2 each; $1.75 each for 10 or more, prior to June 15. After June 15, 1 to 9 queens $1.50 each, 10 to 24 $1.40 each, 25 and up $1.25 each.

ALLEN LATHAM,
Norwichtown, Conn.

# GOLDEN QUEENS 1921

Untested, $1.50 each, or 6 for $8. For 100 lots write for prices. I will begin shipping about April 20, and I guarantee safe arrival and reasonable satisfaction to everybody.

**R. O. COX, Rt. No. 4, Luverne, Ala.**

# Preparedness—One Secret of Success

The world around, but in honey production, all other factors being equal, it is the one qualification for a successful season. You will agree that when the honey flow is on, a single hour of enforced idleness in any one of your colonies is real money lost. Delays then mean dollars and cents to you. Preparedness then will spell the difference between an indifferent season, or a failure, and a highly satisfactory yield.

That's why we urge beekeepers to be ready for any circumstance that may develop. And because we realize that time is so important to honey producers this month, and on thru to fall, we are prepared to ship all orders promptly, from a full stock of supplies. Check the list over and if we can send to you or price for you, any of the supplies named, let us know. We are prepared to serve you, in the interests of your success. Use us.

**Root-Hoffman Frames**

All sizes—The New Process Foundation, Airco, Root's Quality Sections-Root Hives and Supers-Soft Pine-Thoroughly Dried and Cut-Smokers—the Root kind-Veils, Root's Improved Shipping Cases, Single and Double-Tier-Honey Containers.

**THE A. I. ROOT COMPANY OF IOWA**
COUNCIL BLUFFS, IOWA

**Honey Blending in *Glass Lined Steel Tanks***

Every honey dealer recognizes the advantage of producing uniformly colored honey.

Elyria Glass Lined Steel Tanks are equipped with the Nielson Propeller Agitator. It operates on the principle of the ship's propeller, requires little power, affords quick and complete agitation and perfect blending is assured. During agitation the honey is kept at the required temperature by circulating hot water in the tank jacket.

Stout steel tanks, lined with hard, smooth glass enamel, are durable, sanitary and easily cleaned.

**Elyria Honey Melting Ovens complete the melting process in four or five hours and every can is saved**

Write to our nearest branch office for detailed information

**THE ELYRIA ENAMELED PRODUCTS COMPANY, Elyria, Ohio**

NEW YORK, 103 Park Avenue
CHICAGO, Conway Building
PITTSBURG, Oliver Building
SAN FRANCISCO, 16 California St.
LOS ANGELES, San Fernando Buildin

**Canadian Representatives, CANADIAN MILK PRODUCTS LIMITED, TORONTO, ONT.**

MONTREAL, QUE.   ST. JOHN, N. B.   WINNIPEG, MAN.   VANCOUVER, B. C.

**QUEENS THAT ARE REARED to PLEASE**

Our Reliable Three-banded Italian Queens will be ready by return mail promptly after April 5. We will have 1,500. Nuclei in full operation and can take care of orders by return mail. All orders will be filled promptly or money refunded. Requeen your colonies early for the honey flow.

**WHY ORDER FARMER QUEENS?**

They are bred by as skillful and experienced queen breeders as can be found in the United States. There are very few places where queens are reared under as favorable conditions as in our queen-rearing yards. We devote our time to rearing as good queens as possibly can be reared. We spare neither labor nor money in developing our queens. Our first original stock was procured from the highest quality obtainable and it has always been our intention to improve our original stock each year, which we have improved to the highest point. They are very resistant to foulbrood and the very best for honey gathering.

**SUPERIOR QUALITY AND SERVICE**

"Box 184, Long Branch, Ontario, Canada.

"My Dear Mr. Farmer: Enclosed find the sum of $3.50 for three untested queens, which I received in good order. Let me thank you for your kind consideration and prompt action in mailing the queens. I also received your letter. Let me again recite that I am well pleased with your stock and your business methods. When I require any more queens I am glad to know with confidence that I am going to get a square deal."

"Yours truly, JAMES KELLEY."

**We will treat you equally as well.**

You take no risk in buying our queens. Safe arrival and satisfaction in U. S. A. and Canada. Satisfaction is left entirely to purchaser. Prompt service given to all orders. Every queen guaranteed to be purely mated.

| Prices: | 1 | 6 | 12 | 100 |
|---|---|---|---|---|
| Untested | $1.50 | $ 8.00 | $15.00 | $100.00 |
| Select Untested | 1.75 | 9.50 | 17.00 | 120.00 |
| Tested | 3.00 | 14.75 | 25.00 | |
| Select Tested | 4.00 | 23.00 | 42.00 | |

Write for prices on larger quantities than 100.

**THE FARMER APIARIES, RAMER, ALABAMA**

**Where the Good Queens come from**

# FOR SALE

We make a specialty of shipping 2-frame nuclei. Combs are drawn from full sheets of foundation wired in Hoffman frames. Combs will be well covered with bees, and filled mostly with sealed brood and sufficient stores to do them while on their journey. Health certificate with every shipment. Safe arrival guaranteed. No more orders taken than can be filled promptly. Price of each two-frame nucleus, without queen, $5.00. Prices of queens are as follows: Untested: 1, $1.50; 6, $8.00; 12,, $15.00; 50, $60; 100, $100. Tested queens each, $2.50. When queen is wanted, add price of queen to that of nucleus. We begin shipping nuclei with untested queens May 1, but can ship nuclei with tested queens and without queens as early as April 15. Book your order now by sending in one-fourth of the amount of order. The balance you may send just before shipping date. Three-banded Italians only, and as good as can be purchased.

**COTTON BELT APIARIES**
**ROXTON, TEXAS**

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## COLONIES OF ITALIAN BEES

In practically new 10-frame hives at $15 each. No disease. These colonies will consist of at least five frames of brood, plenty of bees with young Italian queens. All combs are wired, straight and built from full sheets of foundation

**Satisfaction Guaranteed**

**VAN WYNGARDEN BROS.**
**R. F. D. No. 4 HEBRON, IND.**

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## BUY YOUR HIVES OF VOSS WOOD AT EXIRA, IOWA

Standard sizes and widths, half-lock corners, reversible bottoms, lock-cap cover. Made of selected white pine, well machined and accurately made.

Prices are in lots of 5, with frames; no foundation.

| 8-frame. | | 10-frame. |
|---|---|---|
| $14.50 | One Story Standard | $15.90 |
| 8.10 | Hive Bodies | 9.10 |
| 9.45 | Jumbo Bodies | 9.95 |
| 4.00 | Reversible Bottoms | 4.25 |
| 4.25 | Lock Cap Cover | 4.60 |

3 per cent discount in lots of 100

Odd sizes and special, same price, if not using more material. Send sample. Prompt shipments.

**VOSS WOOD SHOP,**
**Exira, Iowa.**

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## QUALITY QUEENS AT QUANTITY PRICES

Breed Three-Band Italians only

PRICES FOR 1921

| | Nov. 1 to June 30. | | | July 1 to Nov. 1. | | |
|---|---|---|---|---|---|---|
| | 1 | 6 | 12 | 1 | 6 | 12 |
| Untested | $2.00 | $ 9.75 | $18.00 | $1.50 | $8.00 | $15.00 |
| Select Untested | 2.25 | 11.25 | 10.80 | 1.75 | 9.75 | 16.80 |
| Select Tested | 3.50 each | | | 3.00 each | | |

Breeding queens after June 15, with 2-frame nuclei, $15.00 each.

Queens are reared from mothers whose colonies are GENTLE, HARDY, and as HONEY GATHERERS will compare with any. Each and every queen reared by the latest and most approved methods, thus insuring queens that are capable of duplicating the excellent characteristics of their mothers.

I rear all my queens personally, and strive for QUALITY instead of quantity. You may rest assured that when you order queens of us you are getting among the best that can be produced. You take absolutely no risk in getting our queens for SATISFACTION and safe arrival guaranteed in the United States and Canada. Foreign shipments at receiver's risk. I sell no bees by the pound, nor nuclei, only with breeding queens. Try and estimate your needs for the approaching season and place your order early.

**HERMAN McCONNELL, Robinson, Illinois**

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# HONEY CANS

Let us figure with you on your requirements of Honey Cans. We ship any quantity desired.

**WRITE FOR PRICE LIST**

**ADDRESS**

**THE UNITED STATES CAN CO., Cincinnati, Ohio**
**VIRGINIA CAN COMPANY, Roanoke, Va.**
**BOX 577-D**

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## QUEENS, Select Three-Banded

Write for descriptive circular of our Select Italian Queens. Pure mating, safe arrival and satisfaction guaranteed

| | May 1 to June 15 | | | June 15 to Nov. 1 | | |
|---|---|---|---|---|---|---|
| | 1 | 6 | 12 | 1 | 5 | 12 |
| Untested | $2.00 | $10.00 | $18.00 | $1.50 | $ 9.00 | $15.00 |
| Select Untested | 2.50 | 12.00 | 20.00 | 2.00 | 10.00 | 18.00 |
| Tested | 3.50 | 19.50 | 36.00 | 3.00 | 16.00 | 30.00 |
| Select Tested | 4.00 | 22.50 | 40.00 | 3.50 | 19 50 | 36.00 |

**HARDIN S. FOSTER, Columbia, Tenn.**

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## GOLDEN ITALIAN QUEENS

| | May 1 to July 1. | | | July 1 to Nov. 1. | | |
|---|---|---|---|---|---|---|
| | 1 | 6 | 12 | 1 | 6 | 12 |
| Untested | $2.50 | $12.00 | $22.00 | $2.00 | 10.00 | $18.00 |
| Select Untested | 2.75 | 13.50 | 24.00 | 2.25 | 12.00 | 20.00 |
| Tested | 4.00 | 22.50 | 40.00 | 3.50 | 10.50 | 36.00 |
| Select Tested | 4.50 | 25.00 | 45.00 | 4.00 | 22.50 | 40.00 |

**BREEDERS $12.50 TO $25.00**

10 per cent additional for Exported Queens. Queens for Export will be carefully packed in long distance cages. but safe delivery is not guaranteed.

NO NUCLEI, FULL COLONIES OR POUND PACKAGES.

**BEN G. DAVIS, Spring Hill, Tenn.**

## AT LAST MR. BEEKEEPER

## MAC DONALD ALUMINUM HONEYCOMBS

YOU MAY ORDER FROM 1 to 10,000

AND KNOW THAT YOU WILL RECEIVE THEM ON TIME

The New Brood Rearing Aluminum Comb

55c f. o. b. Pasadena

**RAFAEL & WING, Inc.**
16 Stuart Street
SAN FRANCISCO, CAL.

Are our distributors of aluminum combs for

Washington
Oregon
Nevada
Northern California
Hawaiian Islands

Beekeepers in the above districts should get in touch with them

Hoffman, 60c f. o. b. Pasadena

Langstroth, 60c f. o. b. Pasadena

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*Prompt and Safe Delivery Guaranteed*

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## FOREHAND'S THREE BANDS

### THE THRIFTY KIND

are bred from the best stock that can be gotten from Italy and from our own apiaries. We are constantly breeding and selecting to improve the thriftiness, hardiness, gentleness and beauty of our bees. Twenty-nine years of select breeding have brought our strain of bees up to a standard **surpassed by none but superior to all.**

We guarantee pure mating, safe arrival and satisfaction in the U. S. and Canada.

*Write for circular giving full information about our bees and queens*

**PRICES UP TO JUNE 30**

| | 1 | 6 | 12 | 100 or over ea. |
|---|---|---|---|---|
| Untested | $2.00 | $10.00 | $18.00 | $1 40 |
| Select Untested | 2.25 | 11.50 | 21.00 | 1.65 |
| Tested | 3.00 | 16.00 | 30.00 | ---- |
| Select Tested | 4.50 | 25.00 | 45.00 | ---- |

One pound package: 1, $3.75; 25 or over, $3.50; 50 or over, $3.25; 100 or over, $3 00.

Two pound package: 1, $6 00; 25 or over, $5.80; 50 or over, $5 40; 100 or over $5.00.

Prices are quoted per each package. Add the price of the queen wanted. No three pound packages for sale. Safe arrival is not guaranteed on queenless packages.

**W. J. FOREHAND & SONS, Fort Deposit, Ala.**

# Crop and Market Report

Compiled by M. G. Dadant

### CONDITION OF BEES

Throughout the whole of the United States the condition of bees is excellent. In fact they are a little too forward for this time of year, and the warm weather has induced so much brood-rearing that precautions must be taken to prevent starvation among the bees during the later spring. We advise all beekeepers to look carefully after their bees at every available opportunity and make sure they have plenty of stores, so that brood-rearing will not be hampered through lack of honey.

### HONEY PLANTS

It is too early yet to make any guess on honey plants in the Rocky Mountain region and in the northern half of the United States.

California, however, has had abundant rain and prospects seem very flattering out there. Throughout the white clover region immediately north of the Ohio River, rain has, in part, offset the lack of snow, and clover is coming forward rapidly, conditions seeming very much better than a month ago. The Southern States predict a very good year, as prospects seem excellent.

### HONEY

Contrary to expectations, honey has not risen any in price since our last report. In fact, California is now transporting honey in carload lots as follows: White alfalfa 8½c, amber alfalfa 7c. Package honey is being quoted in carloads, also as follows: 24 2-lb. cans $9.50, 12 5-lb. cans $10, 6 10-lb. cans $10, with carload freight rate allowed to destination.

In the central West honey prices are holding up fairly well, although there is practically no sale in carload lots and only small sales in a wholesale way.

The main stumbling-block on honey prices seems to be the glutted condition of the New York market, which has large quantities of foreign honey still unsold and which is being offered as low as 50c to 60c per gallon.

In fact, the price is now so low in New York that very little honey is coming in, the tendency being to ship directly to Europe at a price which will net as much as shipment through the New York market into the United States.

There is a tendency throughout the whole country for retailing of honey. In fact many producers have bought a stock of friction-top pails and are now putting up their honey in 2½, 5 and 10-lb pails.

The bulk of honey left in the hands of producers remains in the Inter-mountain States, Arizona and New Mexico, and in California, with scattering lots held by large beekeepers in the Southeast, in Michigan and Wisconsin, and some in New York and Pennsylvania. In other parts of the country conditions seem to be favorable towards a disposal of all honey before the new crop comes in.

It is probably at its lowest point now and there will likely be a tendency for prices to stabilize at a little higher value as soon as foreign stocks are disposed of.

Recommendations have also been made for duty on honey coming into this country of 40c to 60c per gallon. Without much doubt some duty will be placed upon honey in the new tariff bill. This, of course, will tend to raise the price of all honey in this country. Just where the market will stabilize is a hard question.

"Falcon" BEES AND BEE SUPPLIES

Recommended cheerfully because used successfully for over 40 years.
Safe arrival on shipments guaranteed. ORDER NOW.

*Distributor for the Central West*

WILLIAM H. RODMAN, 2027 Main Street, Gateway Sta., KANSAS CITY, MO.

*Send for our red catalog*

FALCONER MFG. CONCERN, Falconer, (near Jamestown) N. Y., U. S. A.

*"Where the best Beehives come from"*

BEEKEEPERS WE MANUFACTURE DOVETAILED HIVES, HOFFMAN FRAMES, SECTIONS AND SHIPPING CASES

Our hives are made of best grade White Pine, cut accurate and smooth to standard measure. Sections are made of Basswood polished on both sides. There are no better made.

We carry a complete line of everything used in the apiary. Our shipping facilities are as good as can be found anywhere. We want your business. We guarantee prompt and satisfactory service. Price list free.

MARSHFIELD MANUFACTURING COMPANY, Marshfield, Wis.

PACKAGE BEES

Dependable Three-Band Queens. Prompt service. Prices right

E. A. HARRIS, Albany, Ala.

# BEE SUPPLIES

We are prepared to give you value for your money. Our factory is well equipped with the best machinery to manufacture the very A-best supplies that money can buy. Only the choicest material suitable for bee hives is used. Our workmanship is the very best. Get our prices and save money.

**Eggers Bee Supply Mfg. Co.**
Incorporated
ROUTE 1, EAU CLAIRE, WIS.

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DOWN IN COST

## TINS AND GLASS JARS

ORDER NOW FOR NEXT CROP PACKING

**2 1-2-POUND CANS**

| | |
|---|---|
| 2 dozen reshipping cases | $ 1.45 per case net |
| In 100-can crates | 6.50 per crate net |
| In 200-can crates | 11.00 per crate net |
| In 500-can crates | 24.50 per crate net |

**5-POUND PAILS WITH HANDLES**

| | |
|---|---|
| 1 dozen reshipping cases | $ 1.35 per case net |
| In crates of 100 | 8.30 per crate net |
| In crates of 200 | 16.25 per crate net |

**10-POUND PAILS WITH HANDLES**

| | |
|---|---|
| In one-half dozen cases | $ 1.10 per case net |
| In crates of 50 | 6.70 per crate net |
| In crates of 100 | 12.75 per crate net |
| 5-gallon tins, used, good condition, 2 to case | $0.50 per case |
| 5-gallon tins, new, 2 tins to wood case | 1.35 per case |

**White Flint Glass, with gold lacqd. wax-lined caps**

| | |
|---|---|
| 8-oz. honey capacity cylinder style | $1.50 carton of 3 doz. |
| 15-oz. honey capacity, table jar style | 1.40 carton of 2 doz. |
| Quart or 3-pound honey capacity, Mason style | 1.00 carton of 1 doz. |

NOTE: LOW PRICES SUBJECT TO CHANGE AT ANY DATE

**HOFFMAN & HAUCK, Inc., Woodhaven, N. Y.**

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## HONEY PRODUCERS TAKE NOTICE

Do you realize that it is only a short time until your bees will be taken out of winter quarters? Have you thought about supplies for next season? Do not wait until swarming time for that means dollars out of your pocket. Order your supplies NOW.

We manufacture and carry in stock a complete line of bee supplies ready for prompt shipment. Send us a list of supplies you will need and we will be pleased to quote you our price. Our 1921 descriptive catalog and price list is now ready for mailing send us your name and address and we will mail you our catalog.

**AUGUST LOTZ COMPANY, Boyd, Wisconsin**

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**PORTER** BEE ESCAPE SAVES HONEY TIME MONEY

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BEE ESCAPE
PATENTED

For sale by all dealers.
If no dealer, write factory
R. & E. C. PORTER, MFRS.
Lewistown, Illinois, U. S. A.
(Please mention Am. Bee Journal when writing)

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## HONEY

If interested in either **extracted or comb** write for our prices before buying. They are right.

**C. C. CLEMONS CO.**
DEPT. A
KANSAS CITY, MO.

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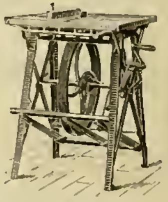
**BARNES' FOOTPOWER MACHINERY**



Read what J. E. Parent, of Chariton, N. Y. says: "We cut with one of your Combined Machines last winter 50 chaff hives with 7-in. cap, 100 honey-racks, 500 frames and a great deal of other work."

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## ELECTRIC IMBEDDER

**Price without Batteries $1.50**
Not postpaid.

Actually cements wires in the foundation. Will work with dry cells or with city current in connection with transformer. Best device of its kind on the market.

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We carry a complete stock of supplies at all times, and can make prompt shipments. Our prices will interest you.

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## QUEENS AND BEES

We are now booking orders for spring delivery.

NUCLEI ON ALUMINUM COMBS

| | |
|---|---|
| 2-Frame nucleus without queen | $6.00 |
| 3-Frame nucleus without queen | 7.50 |

PACKAGE BEES

| | | |
|---|---|---|
| 1 lb. Package | 1 package, $3.00; | 12 packages, $2.85 |
| 2 lb. Package | 1 package, $5.00; | 12 packages, $4.75 |
| 3 lb. Package | 1 package, $7.00; | 12 packages, $6.60 |

Add price of queen desired.

| QUEENS | 1 | 12 | 50 |
|---|---|---|---|
| Untested 3-band Italian | $1.50 | $15.00 | $55.00 |
| Tested 3-band Italian | 2.50 | 27.50 | 112.50 |
| Select tested 3-band Italian | 3.50 | 37.50 | 150.00 |

We guarantee safe arrival.

**PATTERSON & WINTERS, Jourdanton, Texas**

Bees in Packages by parcel post by return mail, or soon. 10,000 pounds of Italian Bees ready to ship commencing April 5.

## Three-Band Queens or Golden Queens

1-lb. swarms with young queens, $5.00 each; 6 or more, $4.90 each
1½-lb. swarms with young queens, $6.25 each; 6 or more, $6.00 each
2-lb. swarms with young queens, $7.00 each; 6 or more, $6.90 each
3-lb. swarms with young queens, $9.00 each; 6 or more, $8.90 each
5-lb. swarms with young queens, $12.50 each; 6 or more, $12.00 each

The 1½-lb swarms are especially prepared for our two-pound Canadian parcel post trade. Larger packages over weigh postal limit. You get full 1½ pounds of bees to the package. We tried this size package ourselves in Northern Ontario last season and had them build up FROM JUNE 1ST to strong colonies which, on an average, made over 50 pounds of surplus honey, besides going into winter quarters with plenty of stores.

WHAT OTHERS SAY ABOUT OUR BEES

"The two 3-lb. packages bought of you last May did all right. One made 185 sections and gave one swarm, and the other made 296 sections and gave two swarms." (Name on request), Kimmell, Ind.

"The ten 1-lb. swarms bought of you last spring, although delayed in transit, and therefore taking five days to reach me, arrived in fine condition, not a cupful of dead bees in the lot. They did well, more than paying for themselves the first season, and went into winter quarters in fine condition." (Name on request), Alabama, N. Y.

"We are only one mile from Lake Erie, and exposed to high, cold winds, in fact this is the windiest place along the Great Lakes. Your bees were able to winter with only an insignificant loss. As for honey, they averaged 175 lbs. each of extracted surplus, did not swarm, and gave an artificial increase of 39 per cent, which is as fine record as can be had in this locality, especially when the work is done entirely by amateurs." (Name on request), North East, Pa.

(The above were 1-lb. packages and were worked by students going to college at this place.)

**M. C. BERRY & CO., Hayneville, Ala., U. S. A.**

## Pure Italian Queens of the Best Known Strain

**A. I. Root and H. D. Murry Three-Banded only**

Booking orders now for spring delivery of two-frame nuclei, two-pound packages, and full colonies

| Prices | 1 | 12 |
|---|---|---|
| Untested | $1.50 | $14.50 |
| Tested | 2.25 | 24.00 |
| Select tested | 3.00 | 30.00 |

Two-frame nuclei with untested queen, $6; 25 or more, $5.50.
Two-frame nuclei with tested queen, $6.75; 25 or more, $6.25.
Two-pound package hybrid bees, each $4. Add price of queen wanted.

No disease near here. Health certificate with all I have for sale. Safe arrival and satisfaction guaranteed.

P. S. Terms one-fourth with order, balance due at shipping time.

**BAUGHN STONE, Manchester. Texas**
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For PACKERS and MANUFACTURERS of FOOD PRODUCTS
LARGE CAPACITY
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**WESTERN PINE HIVES**

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VIGOROUS YOUNG ITALIAN PROLIFIC LAYING

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ORDER NOW
ALL QUEENS ARE
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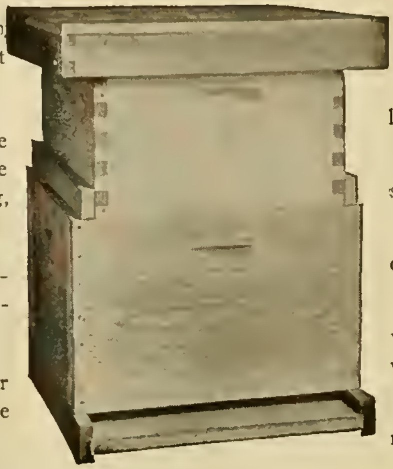
# MODIFIED DADANT HIVE

Your present brood equipment can be put above the Modified Dadant hive used as full depth supers.

Features are: Deep frames, large one-story brood-nest, frame space ventilation, excellence in wintering, swarming easily controlled.

Glance at this illustration to compare this hive with "Standard" Langstroth hive.

You can get 40 per cent greater brood-comb area than in the "Standard" ten-frame Langstroth.



### MODIFIED DADANT HIVE FEATURES

1. Eleven frames, Langstroth length, Quinby depth.
2. Frames spaced 1½ inches for swarm control.
3. Extracting frames 6¼ inches deep.
4. Dovetailed body, regular reversible bottom and metal roof cover with inner cover.
5. Langstroth "Standard" equipment easily used with this hive.

**For free booklet write any distributor of Lewis "Beeware," or to**

**G. B. LEWIS COMPANY, Watertown, Wisconsin**
**DADANT & SONS, Hamilton, Illinois**

# Bee Supplies from the Wood Eternal

**Bottoms, Covers and Bodies that Defy Decay, Good Material, Good Workmanship, Good Prices**

| | |
|---|---|
| Five ten-frame dovetailed hives, complete | $16.00 |
| Five best ten-frame wood covers made | 5.00 |
| Five ten-frame cypress bottoms, full ⅞ in. thick | 4.00 |

### ITALIAN BEES AND QUEENS

Guaranteed to give you satisfaction

| | | |
|---|---|---|
| Untested queens | $2.00 each | $18.00 per dozen |
| Tested | | $3.00 each |

### NUCLEI

| | |
|---|---|
| One frame, no queen | $3.50 |
| Two frame, no queen | 6.00 |
| Three frame, no queen | 8.25 |

### FULL COLONIES

New painted hives, good combs, young tested queens

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|---|---|
| Colony in eight-frame hive | $20.00 |
| Colony in ten-frame hive | 22.00 |

### POUND PACKAGES

| | |
|---|---|
| One pound package, no queen | $3 50 |
| Two pound package, no queen | 6 00 |

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Customers claim this is the best package going

| | |
|---|---|
| One frame brood with one pound bees, no queen | $6.00 |
| Car load bees in eight frame hives shipped from Helena, Ga., each | 12.50 |

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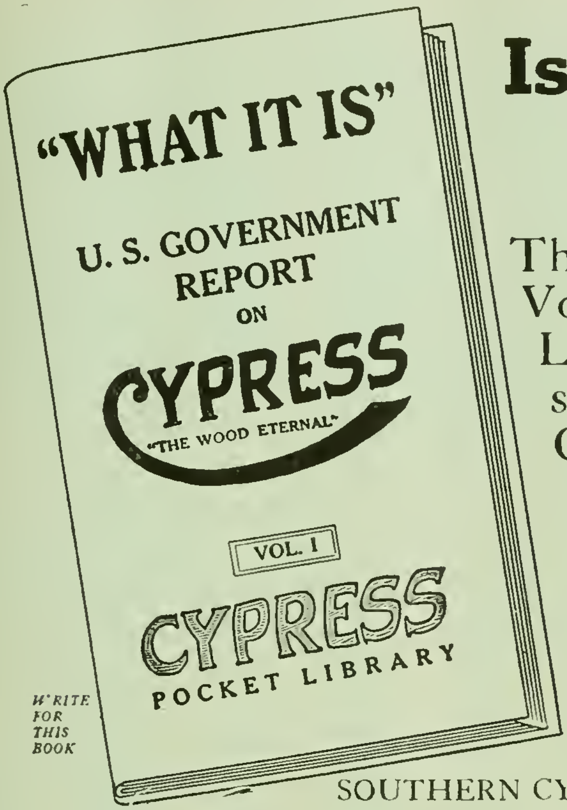

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**Have you Extracting Combs sufficient for those short heavy honey flows?**

**The shallow extracting Aluminum Honey Comb gives you immediate and adequate storage**

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Standard Langstroth (Hoffman brood-frame) size, each ---------- 60c
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Modified Dadant (Jumbo depth) size, each ------ 70c

Prices are f. o. b. San Antonio, Texas.
Parcel Post weight, 1 comb ---------- 2 lbs.
Parcel Post weight, 10 combs ---------- 11 lbs.
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# USE AIRCO FOUNDATION
# PUT YOURSELF IN A POSITION
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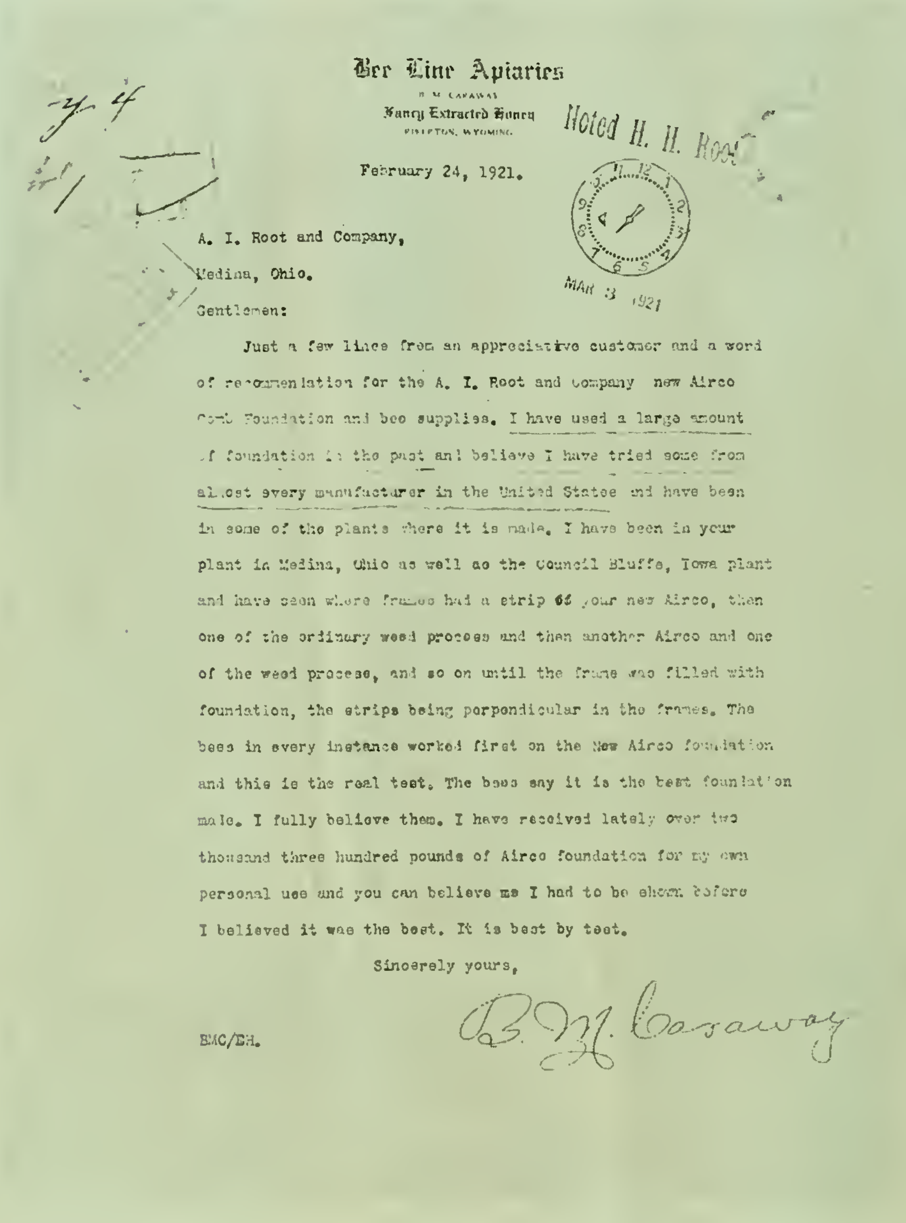

Bee Line Apiaries
B. M. CARAWAY
Fancy Extracted Honey
RIVERTON, WYOMING

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MAR 3 1921

February 24, 1921.

A. I. Root and Company,
Medina, Ohio.

Gentlemen:

Just a few lines from an appreciative customer and a word of recommendation for the A. I. Root and Company new Airco Comb Foundation and bee supplies. I have used a large amount of foundation in the past and believe I have tried some from almost every manufacturer in the United States and have been in some of the plants where it is made. I have been in your plant in Medina, Ohio as well as the Council Bluffs, Iowa plant and have seen where frames had a strip of your new Airco, then one of the ordinary weed process and then another Airco and one of the weed process, and so on until the frame was filled with foundation, the strips being perpendicular in the frames. The bees in every instance worked first on the New Airco foundation and this is the real test. The bees say it is the best foundation made. I fully believe them. I have received lately over two thousand three hundred pounds of Airco foundation for my own personal use and you can believe me I had to be shown before I believed it was the best. It is best by test.

Sincerely yours,

B. M. Caraway

BMC/EH.

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San Francisco, 52-54 Main St.
New Orleans, 224 Poydras St.
New York, 23 Leonard St.
Philadephia, 8-10 Vine St.
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MAY, 1921

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JASPER KNIGHT

This smiling chap is Jasper Knight, Hayneville, Ala. There is not a better Queen Breeder in the South than "Jap." Notice he wears a Muth Veil. It's cool even in Alabama.

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Have you taken advantage of our attractive prices on Bee Supplies? Send us a list of your requirements for quotation. Send for catalog.

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What have you? Send sample with your best price delivered to Cincinnati.

**Old combs and wax**

Don't muss around rendering old comb, it often spreads bee diseases. Send for shipping tags and bag it up at once. We pay you the market price for wax rendered, less 5c per pound for rendering charges.

**Bees---two-frame nuclei with queen, $8.50**

Our nuclei will make a strong colony by fall.

**Queens**

Jasper Knight's famous Three-Banded Select Untested Queens $2. For quantity orders write for special prices.

**THE FRED W. MUTH CO.**
**PEARL AND WALNUT STREETS**
**CINCINNATI, O.**

# A GOOD QUEEN

may bring you $50 worth of honey, while a poor one may bring you nothing; therefore, the cost of a good queen is trifling compared with the returns she brings. Every queen we send out is reared by me personally, and I spare no labor or expense to produce those "good queens" we all desire. I give the strongest guarantee with all queens sent out, and if any should prove other than a first-class queen, I will gladly replace her upon request. The customer's word is good. I could not afford to do this if I did not have faith in the queens I sell.

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"Your bees last year made me the biggest crop I ever had and, besides, they cured the European foulbrood I had, while I lost all my black bees with it."—Martin Bettheuiser, Tunnel City, Wis.

**THEY ARE GOOD HONEY GETTERS**

"Your queens proved themselves to be what their producer claimed, 'fine gatherers.' "—E. A. Palmer, Empire, Panama Canal Zone.

**THEY ARE GENTLE**

"Your bees are very gentle. I also find them to be very prolific, good workers and, in my 12-frame Jumbo hives, not given to swarming."—Harry G. Fesenfeld, Black Earth, Wis.

**THEY ARE PRETTY**

"Queens bought of you are producing some fine yellow bees. They are beauties." —J. E. Beck, Arnold, Penn.

**OUR BREEDERS MAKE GOOD**

"The breeder I got from you last year is the finest queen I ever had."—John Rhodes, West Salem, Wis.

**OUR METHOD OF SHIPPING GIVES PERFECT RESULTS**

"Queens arrived in perfect condition, not a nurse bee dead in the cage."—Arthur Sturges, Shenstone, Hartford, Cheshire, England.

1921 Prices:

1 to 4, inclusive,________$3.00 each.
5 to 9, inclusive ________$2.90 each.
10 or more _________$ 2.80 each
Breeders ___________$12.00 each

We are usually booked some time ahead, so we suggest that you book your order as far in advance as possible in order not to be disappointed in getting your order filled when desired. Write for our catalog.

**JAY SMITH, Route 3, VINCENNES, INDIANA**

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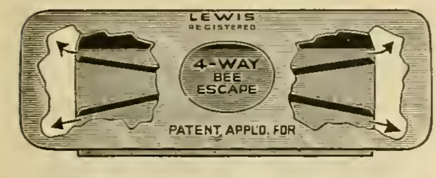
**Lewis 4-Way Bee Escapes**



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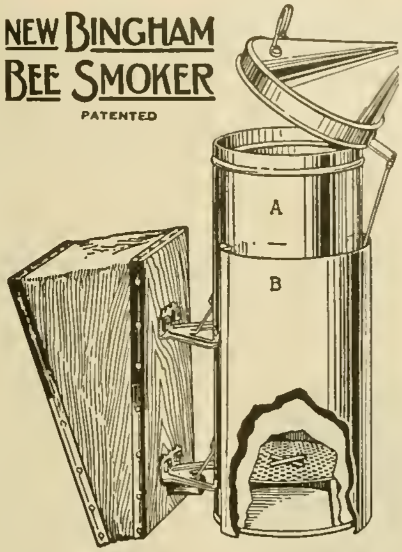

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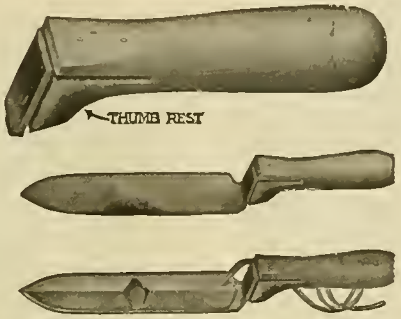
| Doctor | 3½x 7 | 2 |
| Conqueror | 3 x 7 | 1¾ |
| Little Wonder | 3 x 5½ | 1½ |



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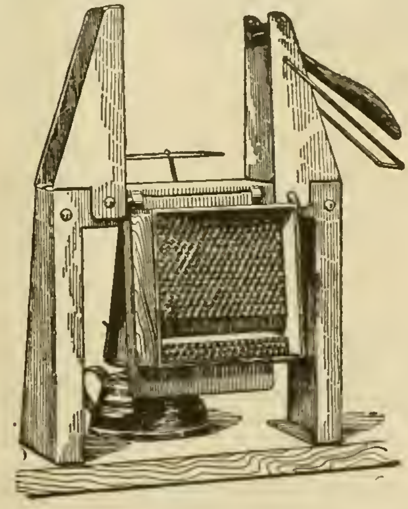

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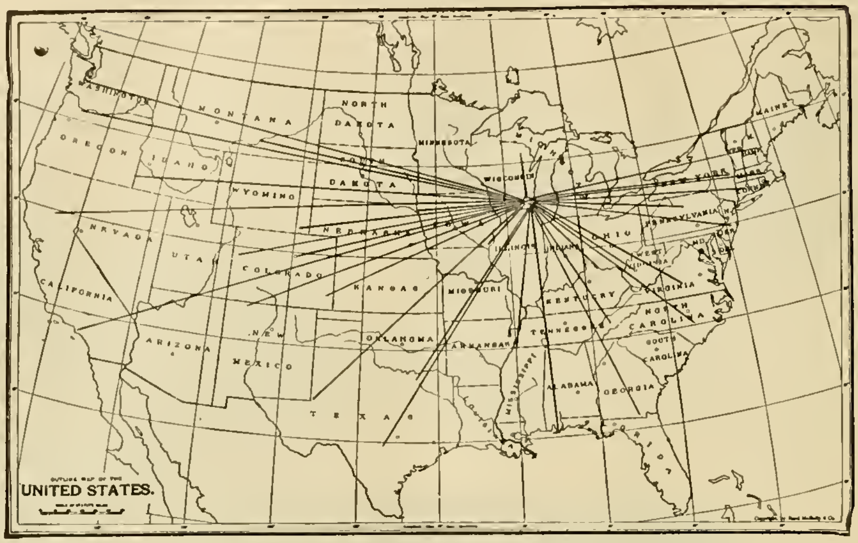
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AMERICAN BEE JOURNAL

VOL. LXI—NO. 5 HAMILTON, ILL., MAY, 1921 MONTHLY, $1.50 A YEAR

# STORES AS CROP INSURANCE

BY G. H. CALE

FEEDING has at times been a much abused practice and a subject of considerable discussion in the bee magazines. In the spring it is common to have colonies run short of stores, and since usually there is a possibility of minor nectar flows occurring to make good the deficiency, feeding is often neglected. Nature is ever a fickle dame, however, and colonies should be watched to insure that sufficient food is constantly present to prevent starvation. As long as there is capped honey in the hive, additional food is, for a time, unnecessary.

However, since the object of all well directed work in the apiary previous to the honeyflow is to have a strong gathering force when the flow begins, there comes a time in spring when feeding is done not only to prevent starvation but also to insure the continuance of brood rearing. When the queen breaks her winter's rest and starts to lay, the daily quota of eggs gradually increases until a high level is reached when the number of eggs in a day may average three or four thousand. Under favorable conditions there is no other period in the year when the amount of brood present at one time is as great as at this peak in the first part of the season. Strong colonies may then increase their population from a force of 15,000 to 20,000 bees to one of 80,000 or more, an increase of 12 to 13 pounds of bees.

### Food Required

Unfortunately, conditions are not always favorable to this increase and one of the frequent drawbacks is the lack of the stimulation which comes from the presence of an abundance of food for the development of the brood. Where there is a limited food supply the number of mouths must of necessity be restricted, and unless nectar is to be found in plenty outside the hive, the daily additions to the brood inside will be reduced some time before the reserve food is exhausted. Strong colonies with large amounts of brood often do not retrench quickly enough, and when stores are scant such colonies must be watched carefully, since they frequently die of starvation in a very short time.

This behavior places an emphasis on feeding which has not been given often enough. A few figures on the requirements of brood are available which are interesting and of much practical value. In looking over the results of the experiments in beekeeping conducted by R. L. Taylor at the Michigan Agricultural Experiment Station, Demuth obtained figures from which he was able to express the total food requirements of the honeybee from the hatching of the egg to the emergence of the adult. It requires approximately 5 pounds of honey to a pound of bees; or one frame of honey to one frame of brood. The probable accuracy of these figures will be readily supported by those who have observed the swift disappearance of stores when brood-rearing is at its height. To increase in numbers from 3 or 4 pounds of bees in early spring to the 16 or 18 pounds which we like to have before the honeyflow, takes a minimum, therefore of 60 to 70 pounds of honey, not figuring the food consumed by bees which emerge and are removed by death.

There is also another factor which enters the feeding question at this time. The mere production of bees is not so important as the need for **bees of the right age at the right time.** Fig. 1.

Since the honeybee is not capable of materially renewing its energy, the life of the worker is not measured by time, but by the amount of work done. For the maximum efficiency of the honey-gathering force, therefore, the workers must not have consumed much energy in field labors before the honeyflow begins. Bees may

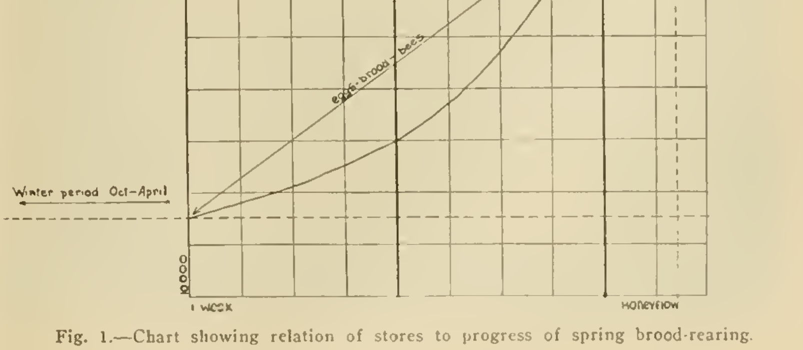

Fig. 1.—Chart showing relation of stores to progress of spring brood-rearing.

easily be too old for the production of the largest crop. On the other hand, it is equally true that a working force with a majority still too young to engage actively in field work will not do justice to the honeyflow until the bees age a bit. It then frequently happens that the best of the flow is over. There is evidently a definite period previous to the honeyflow, during which the raising of bees is the most favorable thing a colony can do.

For practical discussion, the factors which may be considered as determining this period, as above indicated, are the length of life of the worker and the age at which bees first go to the field. Since the usually accepted average for the life of the worker is six weeks, bees emerging previous to the sixth week before the honeyflow are of no use during the flow. Hence, brood-rearing, from the beekeeper's standpoint, assumes first importance in the colony activity for a month and a half before the honeyflow. Yet of the workers produced then only those that are just becoming field bees when the flow starts will be of maximum value. When brood-rearing is at its best, it is not unusual to see 75,000 cells of brood at one time, and we would like to exert some magic which would insure all this brood present as eggs about 35 days before the flow. Should the harvest last over six weeks, of course, it is important to continue with a renewed force of workers until it ends.

There are regions and seasons when, under a natural stimulus, this peak of favorable population is long past before the flow begins and the beekeeper's problem is then complicated by the need of delaying the peak in some way, or of continuing the heavy brood-rearing. No two seasons are alike in this and the beekeeper must be alert enough to be able to shift his program to meet the needs of the occasion.

It is generally unsafe to depend entirely on the nectar resources at this time of year to supply the rich abundance of stores so essential to the development of numerous honey gatherers. Each three days, for weeks at a time, a fertile queen may easily fill two frames with eggs which hatch into thousands of hungry larvæ. The enormous growth which these tiny creatures make in the six days of their larval life is indicative of their food requirements, and there are periods when over 6 pounds of honey a day are needed to keep up the development. When sufficient nectar is obtained, to furnish this amount of food daily, it comes pretty near being a honeyflow for which the bees should have already been developed.

### Providing the Food

The result of this discussion is to bring us back again to the need of providing the colony with at least a part of its spring food requirements in some other way. The feeder is usually resorted to and frequently of necessity. There are years when the early consumption of stores is excessive, due to unusual climatic conditions; or the honeyflow the year before may have failed to supply enough for reserve stores; or other obstructions due to unavoidable circumstances may leave the feeder as the only way out. It can scarcely be disputed, however, that from all points of view, the ideal way to provide stores is to leave an abundance of scaled honey with each colony in the fall; enough to last the winter through and, under normal conditions, to provide for brood-rearing in the spring. There seems to be only two excusable situations for using the feeder, (a) to prevent actual starvation or an undesirable shortage due to unavoidable conditions; (b), to stimulate brood-rearing between honeyflows or in queen-rearing.

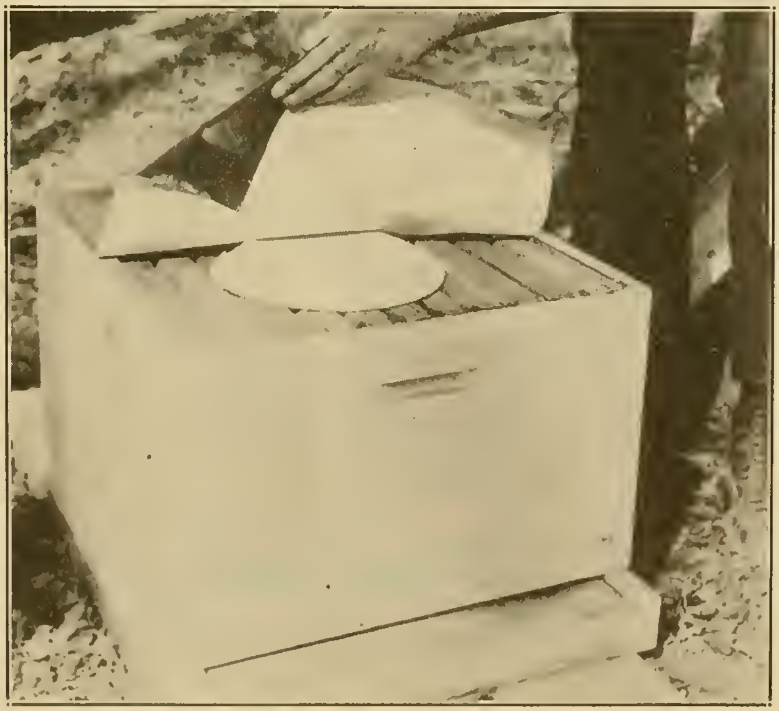

Fig 2.—Plate of candy in place over frames for emergency feeding.

In either case syrup, or candy made of granulated sugar or honey free from disease, are the only foods which can be universally recommended. In feeding to make good a deficiency, the syrup is usually made of one or two parts of sugar to one of water, but for stimulative purposes a much thinner syrup is more effective. A common formula is two parts of water to one of sugar, but it is frequently made even thinner than this. Unless feeding for winter stores, no attention need be paid to securing the inversion of the sugar to prevent granulation, since the bees readily take care of this part of the process. The heaviest feeding is best done during the six weeks' period when brood-rearing is of most value and it must be remembered that at this time large amounts of food are necessary.

Stimulative feeding is a matter which can be overdone, especially in the early season, when the weather is still cool. The practice of stimulation at this time is often inadvisable and, in the hands of the inexperienced, it is easy to overcome the good judgment of the bees and induce them to rear more brood than they can care for properly. Later stimulation may be valueless, since usually when it would do the most good there is sufficient nectar available to serve the same purpose. It should be again emphasized here that, in the spring, neither stimulative feed nor nectar alone take the place of an abundant reserve of stores. Whenever there is a dearth of nectar, however, or it is necessary to keep up brood-rearing out of season, as in queen-rearing, stimulative feeding is an acceptable practice.

Candy feed is most useful in cool weather to prevent starvation from lack of stores. The ordinary Good candy, or queen cage candy, in amounts sufficient to give five or six pounds to each colony, is satisfactory. The receipt for this candy is well known and calls for honey or invert syrup mixed to a stiff dough with confectionary sugar which contains no starch. If honey is used in making the candy it must be free from disease. When mixing, it is a good scheme to heat the syrup or honey, since the resulting candy will then remain stiff at ordinary temperatures. Paper pie plates serve well as inexpensive containers. Fig. 2. Two of these filled with candy and inverted over each cluster of bees will last a long time, unless brood-rearing becomes too great. It is also important to keep the cluster covered with some protecting material, to prevent the escape of heat and, where packing of any kind is used, this may be replaced about the plates. Loose packing may be kept from sifting down between the frames by covering the top of the hive with a burlap or cloth before replacing the packing. Receipts are also available for making fondants, which are useful for feeding in this manner and which do not require the use of honey.

### Preparing the Syrup

When using syrup it is most practical to make, at one time, amounts sufficient to care for all the colonies that may need help. The sugar and water may be mixed and heated in a large container until the sugar is entirely melted. To carry the feed to outapiaries, five-gallon cans are convenient. We use five-gallon oil cans for this purpose, since it is easy to pour the feed from them, and they are stout enough to stand considerable handling. Fig. 3. Of all the feeders used, we find the inverted or atmospheric feeder to be by far the most useful. Two of these, holding five pounds each, are inverted at the edge of the hive with the oil cloths, which we use, turned back just enough to let the bees get to the feed. In settled warm weather this is not of importance. Shallow pans of feed placed on the frames and covered with grass to serve as floats will do very well, but they are not satisfactory unless the weather is warm, since the bees may not take the feed readily. Outside feeders are not satisfactory, since they not only create considerable disturbance but usually colonies already well supplied with stores, being the stronger, get most of the feed, and the object of the work is thus partly defeated.

It is better to be beforehand than behindhand when colonies are in danger of becoming short of stores, and in a country where the roads to outapiaries quickly become impassable to machines after rains or thaws, it is important to watch the chances for visits to the yards. Each yard should be supplied with sufficient cans of feed and with feeders enough to care for later emergencies.

## GARDEN PLANTS WHICH ATTRACT THE BEES

An Iowa reader asks for an article on flowers and ornamental plants which are at the same time good for the bees. There is a long list of such plants, although it seldom happens that a sufficient quantity is planted to help out much as a source of honey. Sometimes in the cities a particular plant becomes so popular that a large number of persons plant it in the gardens. In such cases the bees sometimes get surplus from these garden flowers.

In our grandmothers' gardens a number of flowering plants were common which are seldom seen nowa-days, except as they have escaped and established themselves as weeds in waste places.

### Garden Flowers

Bee balm (**Melissa officinallis**) is still listed in the flower seed catalogs. Catnip has established itself quite generally, although it is no longer commonly cultivated. Bachelor's button (**Centaurea Cyanis**) is still generally cultivated. Cosmos is also a common garden flower which attracts the bees in large numbers. Hollyhock was formerly included in almost every garden and is very easily grown. Apparently it is the source of much nectar and the bees fairly revel in its blossoms.

Heliotropes, Marjoram, Horehound and Lavender are all good. Lavender has been mentioned frequently in recent issues of this Journal. In Europe it is an important source of surplus honey. There are several species, but apparently all are good for honey. Which is most desirable will probably depend upon the soil and climate where it is to be grown. Mignonette has attracted much attention from the beekeepers in the past, some thinking that it might be profitable to grow it extensively for honey alone. Rosemary in Europe is another important source of surplus honey, which is found in this country only in gardens.

The Siberian squill (**Scilla siberica**) is a hardy little flower that can be naturalized in the grass on northern lawns. All that is necessary is to plant the bulbs about two inches below the surface in the fall of the year. The blossoms appear very early in spring, when the bees are most eager for nectar. Often snow will cover the blossoms which come out so early. Usually they will be gone and the top will die down before it becomes necessary to cut the grass with a lawn mower. Every beekeeper who is a flower lover will do well to buy these bulbs by the hundreds and plant them on the lawn. At my old home, at Atlantic, Iowa, there are many of these little flowers which were planted years ago and which have never received any further attention.

The yucca is a very attractive flower which thrives with little attention and which yields some nectar, also.

### Vegetables

Among the vegetables there are several which yield nectar freely and are important to the beekeeper where they are grown for seed extensively. Among these may be mentioned the onion. When the country was new the wild onions on the prairies were visited freely by the bees. Where large seed plantations are grown, surplus honey may be gathered from this plant. Turnips yield so freely that the late J. S. Harbison stated that it would be profitable to grow them for the honey which might be gathered from them. Cabbage, celery, carrots and parsnips are all important, and beekeepers in the vicinity of seed gardens are fortunate.

### Small Fruits

The blossoms of nearly all the fruits commonly grown are valuable as sources of nectar. In addition to the tree fruits, there are several varieties of bush fruits or small fruit which may easily be grown in the garden, thus furnishing attractions for the bees as well as table delicacies. Those most commonly grown are strawberries, raspberries, blackberries, currants and gooseberries.

### Shrubs and Vines

There is a good variety of shrubs suitable for ornamental purposes which furnish the bees with some provender. White clematis, wild cucumber and Virginia creeper are among the best of the vines. Bush honeysuckle and snowberry, or waxberry, are good shrubs.

The above meager list does not by any means exhaust the list, but it offers suggestions. The flowers that attract the bees give double pleasure to the beekeeper, even though he had so few of them that he cannot detect the honey which they yield.—F. C. P.

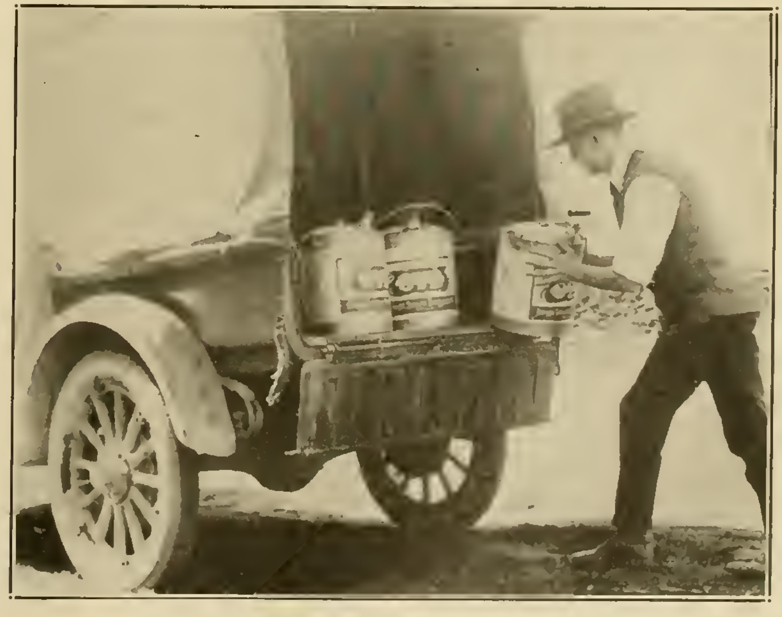

Fig. 3.—Loading feed in 5-gallon cans for use at the outyard.

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THE STAFF

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| C. P. Dadant | Editor |
| Frank C. Pellett | Associate Editor |
| Maurice G. Dadant | Business Manager |

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# THE EDITORS' VIEWPOINTS

## Advertising That Counts

From California comes the report that the California Peach Growers' Association will spend $125,000 in a special advertising campaign during the spring months. This money is to be spent in the region east of the Missouri River, where it is desired to call attention to the fine quality of California peaches.

If California peach growers can advertise with profit in a territory 2,000 miles from home, it is certainly time for the beekeepers to awake to the value of printers' ink in calling public attention to the product of the apiary. Honey was once almost universally used, but various sugars and syrups have replaced it in thousands of homes. The war was responsible for its return to many of these tables, but it will take action on the part of the honey producers to keep it there. Printers' ink is the most effective means. The Honey Producers' League is making a start in that direction, but cannot go far without funds. If the peach growers of California can afford to spend $125,000 for advertising within a few months, how much should the honey producers of the whole country spend during the coming year?

## A Visitor From the Orient

We had a very interesting visit, the last Monday in March. It was from Mr. Alex. Livshitz, professor of beekeeping and poultry keeping at the Jaffa Agricultural College, established by the Alliance Israelite Universelle, under French and Hebrew support at Jaffa, Palestine. Jaffa is west of Jerusalem, on the Mediterranean shore. It is a country where oranges, almonds and other fruits are grown, with irrigation, while olives and grapes are raised without irrigation. They also produce silk, poultry and bees. The honey crop there is of very short duration and exceedingly early. So they need strong colonies, made so by stimulation, early in the spring. Mr. Livshitz' method is to divide the colony, in the fall, in two, with a division board, perforated with a number of very small holes, so that the bees may retain or acquire the same odor. Then the smaller half of the colony is supplied with a queen-cell. The queen hatches, is fertilized and begins to lay. This gives double results in egg laying. When there is no longer any demand for an increase of numbers, the poorer of the two queens is done away with and the bees re-united.

Mr. Livshitz is a very interesting talker, speaking five languages—Russian, which is his native tongue; English, French, German and Hebrew. He has also quite a smattering of Italian, and appears to have mastered all systems of beekeeping. He teaches the Dadant methods, with the help of the Russian edition of "The Hive and Honey Bee." But he laments the fact that the fourth edition of this book is now out of print and that there is little prospect of getting anything printed in Russian for some years to come, in this line.

He considers the Palestine bees as better for that country than the Italians, which he has also tried. The bees of Palestine have whitish bands on the abdomen and a very heavy coat of grayish hairs, which causes them to resemble the Caucasians. But when they lose their hairs by old age and activity they are very black-looking. They are very peaceable, and hang well to the combs.

During the conversation, as he mentioned the appearance of the country, in Palestine Mr. Dadant, Senior, remarked that the best information which he had secured of that country was from the writings of a French author of 1832, Lamartine, the latter having spent several years in Palestine and the Lebanon, and having for a number of months lived in Jaffa. "Yes," said Mr. Livshitz, "my apiary is located in a garden which they call 'Lamartine's Garden,' because Lamartine lived in the house which is surrounded by that garden, and the inhabitants enjoy retaining the remembrance of this noted writer's stay. Lamartine's particular writings on this subject are entitled "Voyage En Orient." He had chartered a ship for this voyage and lived like a potentate during his stay in Asia Minor. But his sole income was his pen.

Mr. Livshitz remained only a day with us, and after giving us an invitation to visit Palestine and promising us, in that event, "a beekeepers' convention" for, said he, "they know more about you than you know about them," he left for his return home, via Washington, D. C., and New York City.

## South Carolina Progress

Professor A. F. Conradi, State Entomologist, is sending out several leaflets to beekeepers, in which he shows the advisability of quitting the box hives and gums. He gives 13 reasons for using movable-frame hives in preference. He also shows the advantages of association and co-operation and, in addition, advises as to the location of the apiary. Address him or the Beekeeping Extension Specialist, Mr. E. S. Prevost, at Clemson College, S. C.

## Pennsylvania Beekeeping Law

Pennsylvania has passed Bill No. 863, for the prevention, control and eradication of diseases among bees. This law permits the Secretary of Agriculture to establish quarantines to control shipment of bees into or within the State. The Chief Apiary Adviser is to examine all queen-rearing apiaries twice each summer. Every beekeeper rearing queens for sale must apply for inspection.

Besides, Section 9 orders that, after July 1, 1923, it will be unlawful to keep bees in any other than a modern movable-frame hive, which permits every comb to be examined to determine the presence of bee disease. The attention of those of our friends in Europe, who still support and recommend the use of skeps or box hives, is called to this regulation, which already exists in several countries. The day is not far distant when they will realize themselves that it is as good a measure as that of compulsory vaccination or inoculation against contagious diseases in human beings.

The text of the Pennsylvania law may be secured by those interested, by addressing the State Chief Apiary Adviser, Chas. N. Greene,Harrisburg, Pa.

## A Newspaper Story

"Stung 4,000 Times! —At 85, Dr. C. C. Miller, of Marengo, Ill., looks back on 59 years of successful beekeeping. He had tried fourteen different kinds of work before that. In 1861 his wife caught a swarm of bees and hived them in a sugar barrel. Dr. Miller became so interested that he made beekeeping his life work. Now he sells 20,000 pounds of section honey yearly and is worth nearly $2,000,000. He has been stung 4,000 times, has become immune from bee sting, and has invented a successful treatment which brings him a considerable income."—LaCrosse Leader-Press, April 13.

The above clipping was sent to us by Mr. C. F. Lang, of LaCrosse, with the question: "Where do they get such news?" Echo answers, Where? Where did you get this, Mr. LaCrosse Leader-Press?

Is it possible to put so many falsehoods in so small a space? This is just silly, but when they exercise their ingenuity in trying to create ill-feelings between nations, as some publishers are doing all the time, ought they not to be punished as criminals? Many people are inclined to believe as gospel truth everything they read in the "paper." Yet there is probably "more fiction than truth" in the statements of the average newspaper, and whenever a piece of news looks too fanciful, better discredit it till it is proved.

### The Miller Fund

Don't forget the C. C. Miller Memorial subscription. We will publish the list in July.

### Changing Styles of Hives

In spite of the fact that we wrote persistently that it is not advisable to change one's style of hives, when successful, we get letters almost daily asking advice about it and showing that the writers of those letters are desirous of adopting the deeper frame. Let us repeat, here again, that there are plenty of very successful men who use small, shallow hives and manage to overcome the difficulties which they present. At this time, especially, when hive material is so very high in price, we cannot advise any one to cast aside his outfit, unless he is actually unsuccessful with it. Economy is at the bottom of the pyramid of success.

We do not wish it understood, however that the box-hive beekeepers should retain the old gums, boxes, skeps, etc. It is imperative for the beekeeper to control his apiary and to be able to examine every hive thoroughly as often as possible. This cannot be done with the immovable-frame hives, whether they be modern hives, with the combs built crooked in them, or skeps, or plain boxes. A movable-frame hive with crooked combs is worse than the old box or gum. But there is no excuse whatever for crooked combs, in these days of comb foundation. The removal of the excess of drone combs which the movable frame hive permits, is a sufficient economy to pay for the cost of a very expensive hive.—C. P. D.

### About Changing Hives

There are times when I find it necessary to disagree with the boss. The above editorial by C. P. Dadant applies to the man who is well established and who has full equipment for a particular system of honey production. In my opinion it does not apply to the beginner who has started with the wrong hive and who expects to extend his apiaries. There is room for a difference of opinion as to which style of hive is best , and the one which is best for one person might not always be best for another. In my own case I started beekeeping with the eight-frame Langstroth hive and found that it paid me to change to the ten-frame, even after I had a full outfit of equipment for a fair-sized apiary. Later I again changed a good-sized apiary from the ten-frame hive to the deeper frame, and believe that this paid also, because of the saving in time and labor in manipulation. As a producer of extracted honey I am very sure that I secured enough larger crops with the ten-frame hives than I did with the smaller ones to make it pay. The difference in the crop secured between the ten-frame hives and the larger ones was not so noticeable as the saving in labor in manipulation. I must add, however, that supplies were cheaper then than now.—F. C. P.

### Opening the Hive

Let us say that **we do not agree at** all with those of our friends who think that the opening of a hive while the bees are at work will disturb the colony sufficiently to make it lose a day's harvest. If a colony of Italian bees is properly handled, it may be opened, examined and closed, with very little disturbance. Many experienced beekeepers will agree with us in stating that field bees often start for the field from an open hive, without apparently being at all disturbed.

### Removal of Drone Comb

In most of the northern temperature latitudes, the month of May is the proper one to remove drone combs from the hives that have more than desired. At this time, there is less honey in the hive, than before or after. The temperature is usually right to examine the colonies. Drone combs, in undesirable spots, should be cut out and pieces of worker combs of the same size inserted in their place. If worker comb is secured from colonies that have died during the winter it may be used for that purpose, by cutting it so as to fit closely in the place of the removed drone comb. If a neat job is done the joint will be hardly perceptible, after the bees have repaired the damage. If wires or twine are used to hold the comb in place, they may usually be removed within a week, for if the bees cover the combs thus repaired they will soon fix them up. Comb foundation is not so desirable as built comb, for this patching work, for it is less readily adjustable. If comb foundation is used, it may be best to remove entire combs, and this is not always advisable. But it is well to remove a comb entirely when it is mainly drone comb.

Dr. Brunnich, of Switzerland, tells us that, in order to secure as large and useful males as possible, he believes in allowing the bees to rebuild their drone combs every few years, for he says, and will show us, in a coming contribution, that drone combs are much more quickly soiled and thickened, by drones, than worker combs of similar age, by the breeding of workers.

### Selling Honey in the City

We have before us a survey of the extracted honey trade in the city of Baltimore, prepared by the "Baltimore News." It is interesting for several reasons. In the first place, it shows very plainly that honey is no longer a staple product as it was once. In the second place, it shows that extracted honey is coming to be recognized by the brand under which it is sold, the same as other package products.

The following packages were found offered by Baltimore grocerymen:

"Airline," put up by the Root Company.

"H. & H.," Hoffman & Hauck, Richmond Hill, N. Y.

"Miss North," Geneseo Jam Kitchens, Geneseo, N. Y.

"Premier," Francis H. Leggett Co., New York.

"Pure Brand," C. H. Weber, Cincinnati, O.

Sunbeam," Austin Nichols & Co., Brooklyn, N. Y.

"Tea Garden," Pacific Coast Syrup Co., San Francisco, Cal.

An interesting portion of the report is the list of 68 retail grocery stores that carry NO honey. Only 17 carry "Airline" and 15 carry Weber's "Pure Brand." Two stores carry "Premier" and four others each carry honey from one of the others listed.

From the above it is apparent that but for the bottler, honey would hardly be available to the housewife in the city of Baltimore. With 68 retail stores which do not carry honey it is still apparent that honey is not available to the large number of families who depend upon those stores for their supply.

This report should open our eyes to the fact that the marketing of our product has been neglected too long and that unless more effort is expended in this direction our industry will not prosper as it should.

Baltimore is probably representative of conditions in most of the cities of the eastern States. We hardly need fear an over supply when more than half of the stores are without honey on their shelves. Under present-day conditions the housewife depends upon the grocer to supply her table, and **unless he has a product in stock, she goes without.**

From the above report it is very evident that there is an unlimited market for several times the honey now produced, if proper attention is paid to getting the product before the consumer.

### Colorado Teaches Beekeeping

The College of Agriculture at Ft. Collins has recently provided for a two-year course in apiculture, combined with poultry raising, small fruit culture or gardening. Prof. C. R. Jones, of the Entomology Department, is in charge of the course. Twenty-one students have already registered for the course, six of whom are regular students and the others vocational men.

### The 1919 Honey Crop

Preliminary figures issued by the Census Bureau estimate the total honey crop for the U. S. in 1919 at 49,100,000 pounds, with a value of $12,800,000. Considering that bees in cities are not counted, this probably approaches the actual figure.

## HONEY PRODUCTION COSTS

By M. G. Dadant

How many of us have given careful consideration to the costs of production of honey under individual circumstances? Probably a majority even of large producers only know whether they are making headway or facing loss, without a comprehensive system of accounting which will give actual profit or loss, including all the items such as interest on investment, depreciation, etc.

Naturally, if the beekeeper is not making much over interest on his investment, it will be better for him to place his capital in some safe interest-bearing investment and spend his time in a more leisurely fashion than does the busy beeman in the height of a prolonged honey season.

Mr. Frank Rauchfuss has recently prepared some tentative figures covering the season of 1920, which should be of interest. They are as follows:

### Cost of Extracted Honey production in Colorado and Adjoining States Season of 1920

### Basis 500 Colonies in Four Yards

| Equipment— | Spring, 1920 |
|---|---|
| 500 colonies bees in 1-story 10-frame dovetailed hives, metal roof cover and inner cover, frames with full sheets wired foundation at $12 | $6,000.00 |
| 50 1-story 10-frame hives, frames with full sheets foundation, wired, at $5.75 | 287.50 |
| 1,500 extracting bodies with combs, complete, at $3.75 | 5,625.00 |
| 8-frame power extractor | 150.00 |
| Peterson Capping melter | 20.00 |
| Steam Uncapping Knife | 4.75 |
| Honey Straining Apparatus | 10.00 |
| 150-gallon Honey Tank | 20.00 |
| Fairbanks Scale | 20.00 |
| Hershiser Wax Press | 41.70 |
| Miscellaneous Tools and Fences for Out Yards | 150.00 |
| Buildings— | |
| Extracting and Honey House | 600.00 |
| Storage for Extracting Supplies | 400.00 |
| Vehicles— | |
| One Ford Truck | 900.00 |
| Total Investment in Business | $14,228.95 |

### Overhead Expenses

| | |
|---|---|
| 6 per cent Interest on Investment, less 2nd year | 853.74 |
| 10 per cent Depreciation on Buildings, etc. | 1,422.90 |
| Insurance on Buildings and Equipment | 200.00 |
| 10 per cent Winter Loss on 5-year average | 600.00 |
| Salary of Owner 8 months at $200 per month | 1,600.00 |
| 2 Helpers, 3 months at $80 per month (without board) | 480.00 |
| Expenses of running Truck for 6 months, at $40 | 240.00 |
| Location Rent for 4 Yards | 80.00 |
| Total | $5,476.64 |

Another set of figures for comb-honey production, based on 8-frame hives, is as follows:

| Equipment value— | |
|---|---|
| 500 Colonies of Bees in 1-story 8-frame Hives, on full sheets of Foundation, Metal Covers and Inner Covers, at $10 per colony | $5,000.00 |
| 50 1-story Hives for Increase, full wired sheets of Foundation, at $5.25 per hive | 262.50 |
| 2,000 Comb-honey Supers, made up and painted, without sections, at $1 each | 2,000.00 |
| Miscellaneous small Items (escapes, smokers, veils, etc.), and fences | 100.00 |
| Buildings— | |
| Honey House | 600.00 |
| Storage House for supers and supplies | 400.00 |
| Vehicles— | |
| One Ford Truck | 900.00 |
| Total | $9,262.50 |

### Overhead Expenses

| | |
|---|---|
| 6 per cent Interest on Investment | 555.75 |
| Depreciation, 10 per cent on Equipment | 926.25 |
| 7 per cent Winter Loss (on a 5-year average) | 350.00 |
| Insurance on Equipment, Bees and Honey | 187.25 |
| Salary of Owner as Manager, 8 months at $200 | 1,600.00 |
| One Helper for 4 months at $25 per week (without board) | 425.00 |
| Location Rent for 4 beeyards | 80.00 |
| Expense of running Truck for 6 months at $40 | 240.00 |
| Total | $4,364.25 |

In extracted honey production the total investment is approximately $30 per colony, including all equipment necessary for handling the bees during the whole year. For comb honey, the investment would only be a little less than $20 per colony.

These figures cannot be far from correct, assuming that the beekeeper had started in the spring of 1920 with new hives bought at market prices.

### Overhead Expenses

There will probably be more criticism of his figures on the overhead expenses. To stand the test of income tax officials, the item of depreciation would have to be split up and different rates charged on buildings, bees, equipment, supplies and truck.

Some may object to deductions for winter loss, since these are made up in spring by the help hired and charged.

The expenses of running truck are certainly not too high. Nor is the item of rental for locations. In the central western States it would be necessary to have more locations for the same number of yards, which would increase the labor, truck expense, location expense, etc.

On the other hand, Mr. Rauchfuss has omitted taxes on his investment, and suggests also that there should be some provision covering disease, losses from theft, renewal of stock through purchase of queens, feeding of bees, and moving operations.

### Profits and Losses

Taking the above figures of investment and expenses as a basis and figuring extracted honey at 15 cents per pound, comb honey at $7, $6.50 and $5.50 per case, according to grade, and beeswax at 38 cents per

Wild thyme. *Thymus Serphyllum.*

pound, the profit and loss account would stand something like this:

**Extracted Honey**

Average 40 lbs. per colony—
Loss $2,680.38
Average 50 lbs. per colony—
Loss $1,981.62
Average 70 lbs. per colony—
Loss $ 482.88
Average 100 lbs. per colony—
Profit $1,502.96

**Comb Honey**

Average of 20 lbs. per colony—
Loss $1,943.08
Average of 30 lbs. per colony—
Loss $733.27
Average of 40 lbs. per colony—
Profit $478.09
Average of 48 lbs. per colony—
Profit $1,448.15

In other words, it would take a 100-pound per-colony production of extracted honey to net the producer as much as a 48-pound per-colony production of comb honey, figuring all supplies at the prices prevailing when the 1920 crop was harvested.

Just whether 500 colonies in 8-frame hives would be able to produce 48 pounds or more per colony while 500 colonies in 10-frame hives were producing 100 pounds per colony would be a much mooted question. Likely much would depend upon location, management, and the man.

It would be interesting if some of our subscribers could give us their figures on costs as actually in operation. It is a question which has been too long neglected by the average beekeeper.

## SCARIFYING SWEET CLOVER

If unhulled sweet clover seed is planted it is likely to remain in the ground from one to three years before it grows. In the case of a small field sowed by the associate editor, few plants came up the season following, but the third spring there appeared a good stand. Even though the seed is hulled, much of it will not grow unless it is scarified. The object of scarifying is to scratch the hard cover so that water can penetrate and thus start germination. Where large quantities of seed are to be scarified a machine is used for the purpose, but it often happens that one will have a small quantity of the seed which could hardly be put through such a machine, even though one was within reach.

It is easy to hull and scarify small quantities of seed by wrapping a block of wood with sandpaper and rubbing the seed between the block and a cement floor. No expensive equipment is necessary, as a sheet of sandpaper can be had for a trifle, and a cement floor is nearly always at hand.

## HOW SMALL A COLONY MAY BE WINTERED?

In the March number of the American Bee Journal you have a statement under the above head. In early May, 1920, I came across a hive which in some way had been left in a 12-frame hive with only three combs in it, and without a division board. It wintered well and, remember, during the severe winter of 1919-20. The hive was one of four wintered outside in a quadruple wintering case, and the hives packed in forest leaves.

**The Pan to Settle Swarms**

For twenty or more years, I have had no doubt that a pan, or any other noise that would drown the sound of the queen flying, would bring the bees down. The reason is that they lose the evidence that the queen is still with them. Probably some one will try to shoot this all to pieces—go ahead.

R. F. Holterman.

Canada.

## WILD THYME IN NEW YORK

By J. E. Crane

No less than seven different names are given this plant, mentioned on page 53 of the American Bee Journal for February, not one of which would seem to be correct.

I became acquainted with this plant some years ago while inspecting bees in the southwest part of Vermont, where the beekeepers called it "horse-mint," still another name for it. I was so much interested in it that I brought some of it home and set in my back yard, where I could watch its behavior and get some estimate of its value for bees. The account given it in this article appears to be quite true except the name. It surely grows on the poorest gravely soils and yields an abundance of honey of fine quality, where very little other surplus honey is to be had. Mr. Merwin states that bees do not winter as well on this honey as on clover. I presume this is true, as it appears to be of lighter body. This may be from the fact that it is gathered the latter part of summer while clover honey is stored early and has the entire summer to ripen in.

The quality of the honey is certainly fine, fully equal, I believe, to clover, but quite distinct in flavor.

Believing this plant was likely to prove of considerable value, as it spread over waste land and unproductive pastures, I felt that it should be correctly named, and showed some of the dry stalks to a local botanist, who thought it wild thyme, and I think I gave it this name in writing to some bee journal; but I was not satisfied, and later, when I had some of the flowers, I sent some to John H. Lovell, of Maine, and he pronounced it "wild marjoram." I also gave some of the flowers to my neighbor, who is, perhaps, one of the best botanists of this state, and he said the correct common name was "Wild Marjoram," and the botanical name **Origanum vulgare.** So we conclude it is not wild thyme at all, but wild marjoram,

Wild marjoram. *Origanum vulgare.*

a near relative of the wild thyme, but none the less valuable.

Gray's Manual describes it perfectly as wild marjoram.

One statement in this article interested me greatly, that the farmers keep their cows on pastures covered with this plant in summer, for I had the impression it was of little value for cattle or sheep and farmers regarded it as a pest. If it should prove a good forage plant as well as a good honey plant it should add much to the unproductive pastures of New England, and other sections of like soils. I have hesitated about putting it where it would spread over my neighbor's land to his injury. Where it has become well established it seems to spread with considerable rapidity. Presumably the birds carry the seed, which are quite small, to new locations. It looks now as though it would cover a large territory in New England and New York in time and prove of great value to beekeepers; but let us all recognize it by its right name, wild marjoram.

## CORRECT NAME FOR THE WILD THYME

### A Reply to Mr. Crane

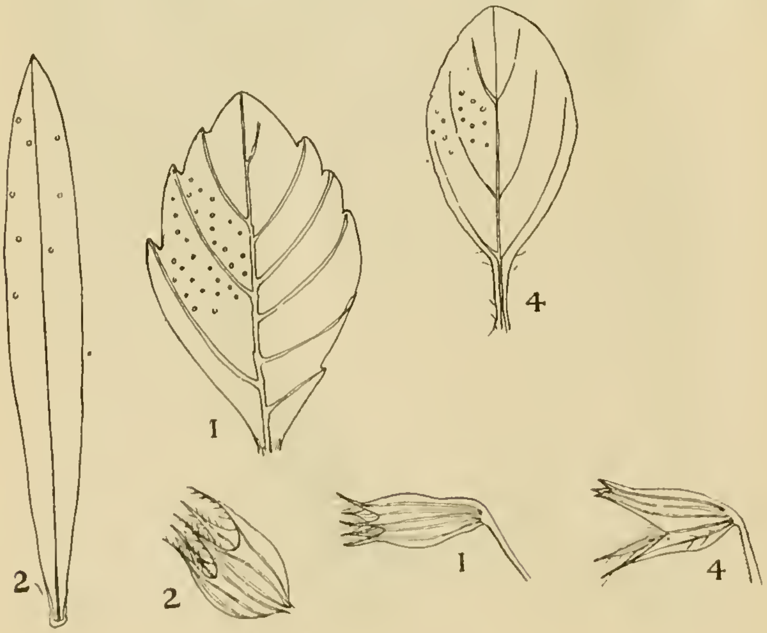
By Frank C. Pellett

The plant which was described on page 53 of our February issue, to which Mr. Crane refers, is correctly named "wild thyme," the scientific name of which is **Thymus Serpyllum.** Wild marjoram, **(Origanum vulgare)** is a near relative of the thyme and there seems to be much confusion in regard to the two plants. Undoubtedly the specimens sent by Mr. Crane to Lovell were marjoram, while the plant we describe is thyme. Both were introduced from Europe and both are found in New England and New York. Since there has been so much confusion regarding not only thyme and marjoram but also other related plants, such as savory and pennyroyal, we have referred the matter to Dr. Trelease, botanist of the University of Illinois, and asked him to help present the matter in such a way as to make clear the differences. Doctor Trelease has kindly sent the photographs and drawings, which appear herewith. By referring to the photographs of the plants it will be noted that they are more or less similar in appearance and it would, perhaps, be difficult to determine from the photograph alone, in every case, which plant a particular specimen might be. However, in the drawings, Doctor Trelease has sketched the differences in the leaves and flowers so that one should have no difficulty in making a correct identification.

Regarding thyme, Doctor Trelease writes as follows:

"In Europe **Thymus Serpyllum,** the classic thyme, occurs in a number of forms which have been considered as distinct species by some botanists. One group of these has the square stems hairy all around; another has the hairs on opposite sides of the stem, not immediately below the leaves but breaking joint with them. Your plant is of this group, and appears to be the variety **ovatus,** which does not produce sterile runners such as we are accustomed to seeing on thyme, and grows as much as a foot and a half high."

While all four of these plants are of interest to the beekeeper as sources of nectar, it is probable that the thyme is most important since it is present over a sufficient area to furnish a liberal amount of surplus honey in several localities.



1. Pennyroyal. *Mentha Pulegium.*
2. Summer Savory. *Saturei hortensis.*
4. Thyme. *Thymus Serpyllum.*

## LARGE HIVES

By E. S. Miller

Speaking of large hives, we tried this year, as an experiment, with about 40 colonies, the plan of giving the queen the range of two 10-frame hive-bodies, placing an excluder and supers above. In the light of this experiment, I am not recommending the plan. Picking out a quart or more of queen-cells every eight or ten days for six weeks was not to my liking, especially since it required the examination of twenty combs in each hive. And then to find that a swarm had escaped from nearly every hive and that one-third or more of the colonies had become queenless, somewhat dampened my enthusiasm for this method of "swarm prevention."

Indiana.

## "WHO PAYS THE FIDDLER?"

By E. C. Shoemaker

During the past two or three years the cost of equipment, and supplies has become a very important factor for the progressive beekeeper to take into consideration when trying to determine what price he should place on his crop of honey. Five or ten years ago this question was just as important, as the relations between market on product and investment in equipment and supplies were not greatly different in ration from figures prevailing during the two-year period ending about July 1, 1920. During the years 1918 and 1919 the increase in cost of supplies was of no great consequence to the average small producer as the steady increase in wholesale and retail honey markets enabled him to market his crop at a reasonable profit, even though, in some cases he was branded as a profiteer by the buying public; this condition, however, not being in evidence a great deal until the year just closed.

The year of 1920 opened up bright with promise for all lines of business, and beekeepers everywhere looked forward to an especially remunerative season. The first six months in almost every line were record breaking, and neither the business interests nor the public in general realized we were on the crest of the "Wave of Prosperity,' and, therefore, the slump came unexpectedly and caught manufacturers, wholesalers, retailers and jobbers in many instances with high-priced stocks on hand. The whole problem of merchandising resolved itself into one question, "Who pays the fiddler?" Many manufacturers wisely chose to dispose of part of their high-priced stocks before the close of 1920 and revalued their remaining stocks on the basis of market or below rather than at cost, thus assuming part of the loss themselves and only passing part of the balance to the consumer as the market steadily declined.

This article owes its inception to the arguments used in recent advertisements appearing in the American Bee Journal and Gleanings defending the policy of manufacturers of bee supplies in their failure to reduce their prices for the season of 1921. One prominent manufacturer pleads his failure to advance price in 1920 as a reason for maintaining practically the same schedule of prices for 1921. In my humble judgment this argument is a little short on logic, for it would have only reflected good business judgment to advance prices when the market and wage scale were both indulging in a "balloon ascension." On the other hand, I very seriously question the advisability or justice of attempting to maintain a high selling price in the face of declining commodity prices and an inevitable adjustment of the wage scale. This same manufacturer states that lumber prices are no cheaper than July or August, 1920.

I am working under a little handicap, as I do not know just what kinds and grades of lumber supply manufacturers use. This matter interested me greatly, even though I am not actively in the market for supplies, and I have accordingly assembled some data on prices which I believe will prove to be of interest to all of my fellow beekeepers. I will not burden the reader with a recital of percentages and will only state that these figures bear out my contention that the present trend of the market is steadily downward. It is true, of course, that this may stop at any time, but up to the present time a steady decline has been in evidence, in fact most of the prices presented in the appended table have been shaded since January 1. California sugar pine and Northern white pine prices have not suffered so much of a cut as the other woods in common use, but reduction in price has also hit these two woods, and there has been some recession in prices since the high point of 1920.

**Cypress—Cincinnati, Ohio. Base**

| | July 1, 1920 | | Jan. 1, 1921 | |
|---|---|---|---|---|
| | 4-4 | 5-4 | 4-4 | 5:4 |
| Fas | $135.00 | $140.00 | $117.00 | $127 00 |
| Selects | 125.00 | 130.00 | 103.00 | 112.00 |
| Shop | 90.00 | 100.00 | 67.00 | 87.00 |
| No. 1 Com. | 65.00 | 68 00 | 47.00 | 50.00 |
| No. 2 Com. | 55.00 | 60.00 | 37.00 | 42.00 |

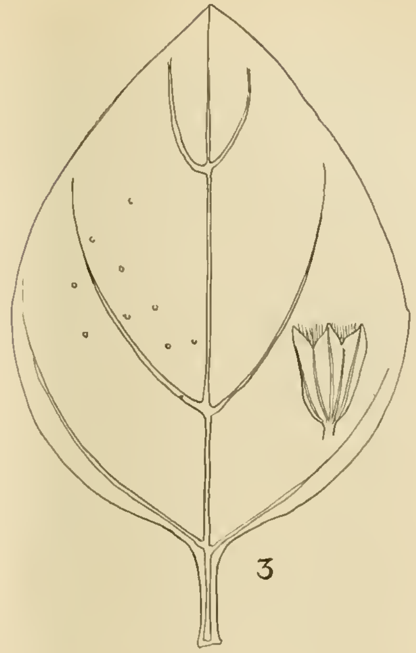
**Basswood. F. O. B. Mill.. Michigan Points**

| | July 1, 1920 | |
|---|---|---|
| | 4-4 | 5-4 |
| Fas | $135.00 to $140.00 | $145.00 to $150.00 |
| Selects | 120.00 to 125.00 | 130.00 to 135.00 |
| No. 1 Com. | 110.00 to 115.00 | 115 00 to 170.00 |
| No. 2 Com. | 70.00 to 75.00 | 75.00 to 80.00 |
| | **January 1. 1921** | |
| | 4-4 | 5-4 |
| Fas | $115.00 to $120.00 | $120.00 to $125.00 |
| Selects | 95.00 to 100.00 | 100.00 to 105.00 |
| No. 1 Com. | 75.00 to 80.00 | 80.00 to 85.00 |
| No. 2 Com. | 45.00 to 50.00 | 50.00 to 55.00 |

**Western White Pine, F. O. B. Chicago**

| July 1, 1920 | Selects B & BTR | "C" | "D" |
|---|---|---|---|
| 1x4, 6x8 in., 10 ft. and longer | $ 98.50 | $ 93.50 | $ 87.50 |
| 1x10 | 102.50 | 97.50 | 91.50 |
| 1x13 and wider | 113.50 | 108.50 | 101.50 |
| 1x12 | 108.50 | 103.50 | 96.50 |

| January 1, 1921 | Selects B & BTR | "C" | "D" |
|---|---|---|---|
| 1x4, 6x8 in., 10 ft. and looger | $ 87.00 | $82.00 | $76.00 |
| 1x10 | 91.00 | 86.00 | 80.00 |
| 1x13 and wider | 102.00 | 97.00 | 90.00 |
| 1x12 | 97.00 | 92.00 | 85.00 |



Calyx and leaf of wild marjoram. *Origanum vulgare.*

The other manufacturer bases his appeal for sympathy on the statement that hives and supplies for 1921 are to be made out of higher priced lumber than the previous year's stock. If the figures quoted in circulars sent out by distributors are correct, we cannot help but wonder what price was paid for stock in 1917, 1918 and 1919, and what relation they bear to prices asked in those years for equipment. The circulars referred to above also convey the information that their lumber supply must be purchased at least a year in advance in order to be properly seasoned at time of manufacture. The writer has been in the employ of a nationally known sash, door and millwork house for upwards of 15 years, who purchases annually several million feet of lumber for manufacture into millwork, and do not usually find it necessary to keep lumber in piles for a greater period than four to six months.

The prices quoted by these two manufacturers have always been pretty close together, but comparison of their arguments at the present time shows one of them basing costs on 1920 market and the other anticipating 1921 prices on lumber as justification for equipment quotations for 1921.

The writer is familiar with manufacturing problems to a sufficient extent to realize that there are many things that the consumer cannot comprehend, but that does not alter the fact that we are now in a buyer's market, and if prices are unreasonable a declining volume of sales will automatically force a lower price.

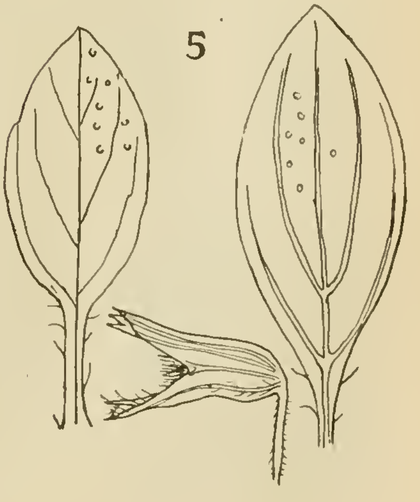
Business men generally admit that turnover of capital invested plays a very important part in earnings. Some of our local retailers seem to be keenly alive to this fact and have put on "discount sales," thus disposing of their higher priced stocks, making ready cash available for purchase of materials on a lower price level, which in turn can be disposed of to the consumer at a price level below last year's figures.

If manufacturers of equipment have the advancement of the industry at heart, now is the time to do a little missionary work; in other words, sacrifice a little ; do not ask the beekeeper to stand more than his share of the loss during the period of readjustment. Co-operation now between manufacturers, jobbers and producer will put our business where it should be; yes, where it must be, to succeed.

Since the organization of our County Association, the writer has consistently advocated co-operation among our members, both as to the purchase of equipment and supplies and also in the sale of our crops. Some opposition has arisen each year to the suggestion of co-operative purchase of supplies that has its origin in the preference of individual beekeepers for some one particular brand of equipment. Our State Apiarist has, I believe, been making a very systematic canvass of the State in the interest of co-operation, which will undoubtedly result in placing this very important matter before the rank and file for thoughtful consideration.

Manufacturers will no doubt prefer to deal with Associations rather than individuals, because of the fact that large orders on a cash or sound credit basis can be handled more economically and with a minimum amount of trouble as compared with smaller orders from individuals of unknown credit. The saving thus effected will inevitably find its way back through the Association to the individual purchaser. Let the good work go on, but until we are thoroughly organized, the individual purchaser should not be unduly penalized while he is being taught the value of co-operation.

Iowa.



Leaves and calyx of Thyme. *Thymus Serpyllum.* A varietal form.

## THE DEMAREE METHOD OF SWARM PREVENTION

Much has been written concerning the Demaree method of swarm prevention and numerous modifications have appeared. Since many of the younger generation of beekeepers seem somewhat confused as to just what the method is, we reproduce herewith Mr. Demaree's original description, which was published in the American Bee Journal on April 21, 1892. Some modification of this plan is in very general use among beekeepers who use the Langstroth hive:

### How to Prevent Swarming

By G. W. Demaree

When discussing this subject the temptation to argue the question, rather than to rely upon a simple description of the manipulation resorted to, to accomplish the object in view, is very great. So many apiarists have imbibed the idea that some sort of contraction of the brood-nest is essential to the production of comb honey, if not the extracted article, that any new discovery that runs counter to this idea of contraction meets a deaf ear, if not open opposition.

Let me say, once for all, that when a new discovery is applied to an old system, it often becomes necessary to revise the old system to accommodate it to the newly-applied discovery. These remarks apply not exclusively to the old system of bee-culture, but to all systems pertaining to all industries. Those persons who are determind to stick to the old paths of the past, are not in position to profit by any new discovery; and this essay is not written for that class of readers.

When your apiary is as large as you want it, what would you give to be able by a simple, practical manipulation at the beginning of the swarming season, to hold all your colonies in full strength of working and breeding force steadily through the entire honey harvest? You can do it beyond a doubt, by practicing my new system of preventing swarming; and if you have the ingenuity to apply proper management to suit the new condition, your surplus yield will be larger than by any other method heretofore made known to the public.

Pennyroyal. *Mentha Pulegium.*

I have practiced the new system largely for the past two seasons, and my surplus yield was never so large, though it is well known that the past two seasons were not above the average as honey-yielding seasons.

As I have already intimated, my plan of preventing swarming, and entirely preventing increase, is accomplished by one single manipulation right at the commencement of swarming. Only one hive and its outfit is used for each colony. Any system that requires a divided condition of the colony, using two or more hives, is not worthy of a thought.

In my practice, I begin with the strongest colonies and transfer the combs containing brood from the brood-chamber to an upper story above the queen excluder. One comb containing some unsealed brood and eggs is left in the brood-chamber as a start for the queen. I fill out the brood-chamber with empty combs, and I have a full outfit for my apiary. But full frames of foundation may be used in the absence of drawn combs.

When the manipulation is complete, the colony has all of its brood with the queen, only its condition is altered. The queen has a new brood-nest below the excluder, while the combs of brood are in the center of the super, with the sides filled out with empty combs above the queen excluder.

In 21 days all the brood will be hatched out above the excluder, and the bees will begin to hatch in the hatcher out above the excluder, and so a continuous succession of young bees is well sustained.

If my object is to take the honey with the extractor, I tier up with a surplus of extracting combs as fast as the large colony needs the room to store surplus. Usually, the combs above the excluder will be filled with honey by the time all the bees are hatched out, and no system is as sure to give one set of combs full of honey for the extractor in the very poorest seasons; and if the season is propitious, the yield will be enormous under proper management.

The great economy of this system is, all the colonies will produce as nearly alike as can well be—a condition of things that never occurs in any apiary swayed by the swarming impulse. If my object is fancy comb honey, I tier the section cases on the super that contains the brood, and push the bees to start all the combs they can; at the close of the season I extract the honey from the combs in the super, and feed it back to properly prepared colonies to have the partly-filled sections completed. The nicest honey in sections that I ever produced was obtained in this way.

To feed back successfully requires as much experience as any other work connected with the art of producing honey, but the theme is too broad for a place in this connection.

The system above described works perfectly if applied immediately after a swarm issues. The only difference in the manipulation in this case is, that no brood or eggs are left in the brood-nest, where the swarm is hived back.

## THE DEMAREE PLAN

By E. S. Miller

The "Demaree Swarm Prevention," as described in the December number, page 425, apparently is not the Demaree plan at all. A number of years ago, being rich in inexperience, I tried with about fifty colonies, this scheme mentioned by the gentleman from Shanghai. My notion was that by putting the old queen above an excluder with a frame of brood and empty combs, and allowing the young queen to emerge below, the colony might thus be requeened. Well, the result was that in nearly every case, later examination showed that not only was the young queen missing, but, also, a weakened condition of the colony indicated that swarming had occurred. Over ten years' use of the real Demaree plan has for the most part proved satisfactory.

In the November number, respecting mating from above an excluder, I neglected to state that in order to make the plan a success, there must be no queen-cells or unsealed brood at the time the cell from your breeding queen is introduced. Do it this way: Put the old queen in the lower hive-body with one frame of brood, filling out with empty combs or foundation. Next, place a queen-excluder, then one or more supers, then another excluder, and lastly, at the top, the brood. After the brood is all sealed and all queen-cells removed from the top story, insert a ripe cell from your best breeding queen. Shove the upper hive-body slightly forward, so that the young queen can get out at the back of the hive. The purpose of the two excluders with intervening supers is to separate the two queens. If there is unsealed brood or queen-cells the virgin will, in most cases, disappear, whether there is an old queen in the hive or not, often taking with her a swarm.

The scheme for requeening advocated by some writers, namely, killing the old queen and at once inserting a cell, simply will not prove a success at any time when conditions are favorable for swarming. To be sure, if the beekeeper comes around a month or so later, he is very likely to find a young queen, but it must not be assumed that it will be a queen from the choice cell introduced.

## IS HONEY TOO HIGH?

By T. C. Johnson

Honey is moving very slowly this season and I have made a great deal of inquiry of both storekeepers and consumers, and every time I get the same answer—too high priced. I have several customers that used a whole case when it was $4 per case that have only used one or two sections this winter.

Grocery keepers that usually sold one and two cases per week are not selling one a month, and I have one store that has not sold one case in the last two months. There is something wrong somewhere. Why is honey not a staple, the same as syrup? I find plenty of syrup in every grocery that I visit, but many stores have no honey at all, and when asked to buy honey they give the same old answer—too high in price. Honey is not a staple, but a luxury. Honey should not be compared to syrup in price for it is not compared to honey in quality.

Before the war when I sold comb honey at $4 per case I got my sections for $4 and $5 per thousand, now they are $22. One thing sure, we beekeepers and supply dealers must get together somehow and make honey a staple in place of a luxury, so that all American children can have at least a taste of nature's best sweet.

I trust that the Honey Producers' League will do something worth while to put honey where it belongs, in every American home.

## VARIATION IN DISEASE RESISTANCE

By T. A. Myers

Why not use these differences in controlling American foulbrood?

The behavior of bees, in any respect, and under any given conditions, depends not alone upon those conditions, but also upon the stock of their mother, the queen. When we confine ourselves to Italians we can still notice those many little differences, in the way they work, how they finish honey, in wintering, in building up in the spring, in accepting a strange queen, in robbing, and many other things. These various dispositions which individual colonies show, are inherited to a greater or less extent. But how can these various dispositions help us in American foulbrood?

Whenever an individual larva gets the germs of this disease, it dies, be the colony strong or weak. As strong colonies are the most active and progressive they are the first to get the disease. Therefore keeping healthy colonies strong is no protection against American foulbrood.

Take a yard of 100 colonies in an American foulbrood district with a limited source of infection, as it usually is. This method will be especially useful in a locality where it is difficult to find all the infection and eliminate it. Say one-half of the one hundred colonies get foul the first year. They are shaken and the brood piled two or three high to hatch out, and raise a queen. In twenty-one days this brood is again shaken and the infected combs removed. If we have done this work properly the yard is now free from disease; but have we done everything we can to keep it so? Yet this is where most beekeepers stop.

Suppose in the fall, when we kill all poor queens, we include those which got foul, together with the queens raised from them, and replace with cells from a good queen whose bees staid clean. (In no case does the queen carry the disease, but she does keep on raising bees of the same quality and character as before.)

By working along this line for a few years the amount of American foulbrood can be greatly reduced. We are working in harmony with the law of the survival of the fittest, by killing those queens which would have died if we had not taken the disease away

Summer Savory. *Saturei hortensis.*

by shaking. We are assuming that the beekeeper does not hand the disease around by changing combs.

The beekeeper must buy some queens, and as most of the queen-breeders are in clean territory and have not had the chance to select bees along this line, their queens are not usually as good along this line as bees the beekeeper could select. In other words, a larger per cent of colonies with queens from a healthy district will get American foulbrood from a given source of infection than colonies of our native Italian stock. This is a big chance for some queen breeder who has had to discontinue selling because of American foulbrood.

Great progress will never be made along most lines without selection for that particular quality. Bees that are good in some respects are not necessarily good in every respect, especially if they have never been selected along those lines.

To reduce the number of colonies that would get American foulbrood from any unknown source would be a great help where the disease is common. This can be accomplished by selection. Selection will not keep the colony from having the disease after it has been brought in and fed to the brood. Neither will it help to cure American foulbrood. Shaking is the remedy after the disease is established in a colony. But prevention is better than cure. Selection with this quality in mind will bring results worth while.

Idaho.

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## EFFECT OF SHIPMENT ON QUEENS

By C. P. Dadant

Is the shipping and mailing of queens injurious to them? This is an important question which I discussed with Mr. Elton Warner, while visiting him in January last. As I stated elsewhere, Mr. Warner transported hundreds of queens to and from Porto Rico, and thousands from one apiary to another in Porto Rico (in some cases distances of over 50 miles) and from his South Carolina apiaries to his apiaries in western North Carolina, a distance of 200 miles. Since nearly all of these queens were of his own rearing, his opinion on the decreased value of a queen, owing to transportation, is of some weight, for most of us either ship or receive queens, but rarely do both.

If we take up Doolittle's "Queen Rearing," chapter 21, we find some interesting statements concerning the decrease in value, as to prolificness, of some queens, after a sudden translation from a populous hive to a small cage and confinement in a small space, with additional rough handling, at a time when the queen is heavy with eggs. Doolittle also quotes Alley's "Handy Book," which is no longer to be purchased. Both of these men, who were authorities on queen rearing, agreed in stating that when a queen's laying is suddenly interrupted, she is likely to suffer in her future prolificness. Mr. Warner's opinion is that a queen which is long confined in a cage may be injured as to her prolificness, especially if she was laying abundantly when taken. Such a queen may be permanently injured, as far as her personal worker progeny's numbers are concerned, though as a mother, of other queens, she would transmit the qualities which she possessed before her confinement. This agrees so fully with the writings of the experts above mentioned, and with my own past experience that I feel sure there is some truth in it.

The additional experience of Mr. Frank C. Pellett may be quoted on this matter. Mr. Pellett, in his "Practical Queen Rearing," wrote:

"Much dissatisfaction arises from the sale of breeding queens at high prices. The buyer who pays $5 or $10 for a breeding queen will too often expect too much of her. . . Queens that have been laying heavily suffer seriously from the confinement in a small cage and the journey through the mails.

"Buyers should bear in mind that old queens which have laid heavily, for one or more seasons, cannot be expected to repeat their former performances after a journey by mail. Such queens can only be shipped safely on combs in a nucleus, where they can continue laying lightly for some time. Someone has compared the sudden checking of the work of a laying queen with the shipment of a cow, which is a heavy milker, without drawing her milk for several days. Neither can be expected to be as good again."

To ship a valuable queen, Mr. Warner would forward her in a nucleus, in which she could continue laying to a certain extent. Starting from this, since it is the sudden interruption of heavy laying which is objectionable, it follows that there is less danger of injury to a young queen which has not yet extended her laying to its full capacity in a colony.

Elton Warner.

Warner says, and the experience of leading men strongly supports his statement, that the shorter the confinement, the less difficulty there is in introduction. Evidently the bees are better able than we are to know whether the queen given them is in good shape. That is why queens that are just exchanged from one hive to another, in the same apiary, may be introduced safely by methods, such as the smoke method, which fail utterly in the introduction of queens that have been confined a week or more. In the one case their laying capacity is absolutely uninjured; in the other case, the queen may seem at first as unable to lay as an old worn-out queen, even though she would be quite likely to recuperate promptly. That is why we sometimes see the bees preparing to supersede a queen which has just been given them and which has been, perhaps, recommended as an extra-prolific queen. In other words, a queen which is able to lay eggs immediately upon introduction, in liberal numbers, is more certain of safe introduction than one which is fatigued and slow to lay, at first.

This experience, which tallies with that of the three master breeders already mentioned, also tallies with my personal expriences. Let me recall something which I have mentioned before in this magazine:

It is a commonly accepted opinion that it is impossible to succeed in introducing a laying queen to a colony with drone-laying workers. Yet I have never failed in doing so. But, as such an introduction is well-nigh undesirable, owing to the worthlessness of the drone-laying colony, I never risked any valuable queens in this operation. When receiving queens from Italy and using them to supersede hybrid queens or queens of common stock, if I had a drone-laying colony, I would select the best, among those queens to be killed, and introduce her to this worthless stock. The queen, fresh from a full colony, and in fine laying condition, would at once go to work and the bees evidently respected her for that reason.

Let it not be understood that travel and confinement always damage valuable queens, but such confinement and subsequent travel are not desirable. A good way is to confine such a queen to a small colony, for a few days previous to shipping her. But as a rule, young queens, whose laying capacity is not yet fully developed, are less likely to be injured by travel than a queen which is heavy with eggs at the time of shipment.

This may be also the reason why the queens which we used to import from Italy in small boxes, with two combs a few inches square and a retinue of about 50 workers, gave better satisfaction than those which are sent now-a-days in cages of limited space with no comb at all.

Again, for safe shipping of queens at long distances, Mr. Warner suggests a method which he has tried: Make up a strong nucleus a couple of days beforehand, with plenty of young bees, allowing them a flight so as to let all the old field workers return to their home. Then place the queens to be sent (any number of them) securely fastened, in individual cages, in a frame, within the center of this nucleus, accompanied by only a few bees each, but surrounded with the young bees of this strong nucleus, to keep them warm and feed them. The combs of the nucleus must be old enough and strong enough to withstand rough usage and there must be an ample amount of good honey, or, better yet, sugar syrup.

The queens sent in this way would be kept warm, they would be well fed. This would enable the shipping of queens earlier in the season than is safe to do under present conditions, when they are sent in cages. A nucleus may be boxed so that it will be in a pyramidal shape, with a cushion on the underside and a rope handle at the top. There is thus no inducement to lay the box on its side, and express shipments would be likely to arrive safely, more so than mail shipments.

But for a very valuable queen, Warner is in exact agreement with Alley, Doolittle and Pellett, suspend the laying gradually and keep the queen in nucleus. Ventilation is needed, but darkness should accompany it, as the bees and the queens worry much less in darkness than in daylight.

Mr. Warner told me of having accompanied a shipment of over 200 queens in a single large package of this kind. The package used was an ordinary ten-frame hive body. The queens, in small and large mailing cages, were securely fixed on frames hung within the hive body with its specially prepared population of bees. Ample air circulation was provided for, but the inside was made as dark as practicable. The queens had a 25-mile automobile ride, a two-days' wait for a steamer, a 1,400-mile sea voyage, from Porto Rico to Brooklyn, a taxicab ride across the Brooklyn bridge and up Fifth Avenue, a train ride by express 800 miles, with a final automobile ride to their new home in South Carolina. Most of these queens were introduced promptly, but a few of them were placed in a queenless colony and kept for about a month. These queens were observed once or twice a day, on the sea voyage and also while in the express car; that is, the outside of the package was observed as to sight, sound and smell, as well as for temperature. In this form of shipment a small cage is as good as a large one, and takes less space; a half dozen accompanying bees better than more. Mr. Warner reported the loss as inconsequential, with the total elapsed time from caging the queens till their release, almost two full weeks.

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## MAKING RAPID INCREASE

By Frank C. Pellett

The following is an account of an experiment with fourteen colonies which was designed to test the amount of increase and honey that could be secured in two seasons. Without at any time running the risk of weakening the parent colonies to the danger point in making increase, the first season the colonies were divided as often as conservative methods would permit. The second season the colonies were pushed for honey production. Swarming was prevented as far as possible and no artificial divisions were made. At the close of the second season we had increased to 67 colonies in good condition for winter, and at pre-war prices, sold $700 worth of honey. In addition to the increase and honey above mentioned we had 180 or more sets of new combs drawn, which at $1 each, would be worth $180. This is about half the value at which newly-drawn combs in full depth extracting frames are usually estimated. We also had reserved about $100 worth of honey, which had not been extracted, for use in starting new colonies the following season. The total net return, in addition to the increase in bees, was then nearly one thousand dollars from 14 colonies in two years.

Right here it should be stated that such a result was possible only because there happened to be two very favorable seasons together. During the first season of the experiment, there was an almost continuous honey flow, which made it easy to increase rapidly. Had it been known in the beginning that the season would prove so extremely favorable, it would have been possible to make a much larger increase in the number of colonies, but we did not at any time increase beyond the point of safety, in case the honeyflow ceased abruptly. The second season proved to be one of the best for several years, so that the crop was much above the average, and very favorable for the success of the experiment. Given the same favorable advantages, a beginner could hardly expect to even approximate such a result, although an expert beekeeper might make a better showing. This is not written with any intention of claiming any remarkable result, but rather to show the possibilities of beekeeping when proper attention and favorable conditions are combined.

### Making Increase

The bees were left in their packing cases until after fruit bloom was over in May. The colonies had been wintered in two-story hives in packing cases. The two-story hives gave them plenty of room for spring brood rearing and the packing cases furnished them with good protection against the changing weather of March and April. Although the weather was not as warm as it is most years at the season, the packing material around the hives made it possible for the bees to build up rapidly and the hives were soon full of brood and honey. As soon as the weather seemed warm enough to make it advisable, queen rearing operations were started, so that we were prepared to provide each new colony with a queen. Whenever a colony became strong enough so that it could be divided without leaving it too weak, part of the sealed brood was taken away and placed on a new stand and given a sealed queen cell. If the colony had ten frames of brood it seemed safe to take four frames with the adhering bees and use them to start a new colony. By the time the queen had emerged and began to lay there would be a nice cluster of bees and the colony would build up rapidly. If the weather continues favorable it is an easy matter to build up a nucleus of only two frames, but if there is a sudden check of the honeyflow such weak divisions will require a lot of nursing to get them through, and it may easily happen that the beekeeper will lose much of his newly made increase. By taking only such an amount of brood as a colony can spare without greatly weakening it, and if necessary combining the available brood from two or more hives, to make a nucleus strong enough to weather unfavorable conditions, one need run little risk of failure. Later in the season, when we did not wish to lose the time necessary to wait for the emergence of queens from sealed cells, and the delay in mating, we secured a supply of laying queens. The queens were introduced immediately when a division was made, and would be laying in a very short time. The hives were placed in pairs on cement stands, where they were expected to remain permanently. Ten-frame hives were used, for the most part, and in addition to the frames of brood taken from the parent hives the remaining space would be filled with drawn combs, so that the bees were not taxed to build combs when the colony was weak. Sometimes it became necessary to give full sheets of foundation because of a lack of a sufficient supply of drawn combs, but generally we succeeded in getting combs drawn above the parent colonies.

At the close of the first season we had 59 strong colonies from the original 14, and at no time during the season had we weakened the colonies seriously. In addition to the increase of 45 colonies we secured several hundred pounds of honey and something like forty sets of newly-drawn combs.

### The Second Season

Since it was honey we wanted, instead of bees, the second season, every effort was put forth to make the colonies as strong as possible and to keep them from swarming. While it is impossible to entirely control natural swarming in large apiaries, it is considered as undesirable. If some increase is desired, it is much better to break up a few colonies and make as many as possible from them, using the poorest colonies for that purpose and giving queens from the best stock. Strong colonies are the ones that harvest the big crops and for this reason the medium or poor colonies are the ones to use for increase. It would be a mistake, of course, to breed the queens from these inferior stocks. The queens should be reared from the colonies producing the largest amount of honey.

However, no attempt was made to get increase the second year. The close of the season found our 59 colonies increased by natural swarms to 67.

The bees were wintered as before and permitted to build up in the same manner during early spring. At the close of fruit bloom many of the colonies were getting crowded and required some attention to prevent them from swarming. When the colonies had become strong, each was examined carefully, and if there was any indication of a desire to swarm, such as newly-started queen cells, the queen was removed with a frame of brood and placed in a new hive. A second frame containing eggs or newly-hatched larvæ was also removed and placed beside the one on which the queen was found. The rest of the space was filled with drawn combs or full sheets of foundation. The hive body containing the queen was then placed in the same position where the hive had been and a queen excluder placed over it. The old hive was then placed directly over it so that the bees could pass freely up and down from the old brood-nest to the new, but the queen was compelled to remain below, where the supply of empty combs gave her an abundance of room to lay. A few days later, it became necessary to remove all queen cells from the upper story to prevent swarming.

A sudden drop in temperature, just after lifting the brood above, resulted disastrously for a few colonies, since the bees went into the upper story and left the queen and her newly-laid eggs without suitable protection below. There is this element of danger when it is done too early in the season. A better plan is to place a super of empty combs directly above and to let the queen begin laying in this, and later set it below with an excluder between the bodies, if the weather is still cold.

When the honeyflow began in earnest, the supers of full depth combs were set on the hives as fast as the bees were ready for them. As soon as they showed the least signs of crowding, another super was placed, so that there was never lack of room in which to store. No effort was made to extract any of the honey until the clover flow was nearly over. At that time nearly all the colonies were four stories high, many were five stories, and the best were six stories high, and all were nearly full of brood and honey from top to bottom. The stronger colonies occupied two stories with brood and had four supers full of honey. About 140 sets of new combs were drawn the second season. Getting new combs drawn during a heavy honeyflow, such as this proved to be, is expensive, and had we been supplied with sufficient combs to take care of the honey during the height of the season, our showing would have been still better.

When the clover flow was nearing a close, the surplus was extracted and supers replaced on the hives. The clover honey is of better quality than the fall honey and it is seldom advisable to mix it. About five thousand pounds of clover honey was taken and something more than a thousand pounds of fall honey, making more than three tons in all. It found a ready sale at 12½ cents wholesale. As already stated, something like half a ton was left in the combs for use in starting new colonies the following season, so that, including that taken the first season (exact figures as to amount were lost), more than $800 worth of honey was produced during the two summers, besides a sufficient quantity to winter the bees. Nearly 100 pounds of wax was also secured.

It will be noted that no account of expense of supplies is mentioned here. Most of the supplies were for hives, foundation and fixtures to be used as a permanent investment, and the increase in the number of colonies of bees would far outweigh such incidental supplies as containers, labels, etc.

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## ECONOMY IN THE PRODUCTION OF QUEEN BEES

### Part I—A Swarm-box Hive

By Geo. D. Shafer

In the extensive queen-breeding yards of Mr. J. E. Wing, of San Jose, Calif., there have been developed from well-known methods, certain modifications of practice which are decided improvements from the standpoint of time and bees in the production of first-class queens. Mr. Wing has always been generous in explaining his methods to others, and with his consent a series of three articles has been prepared for the American Bee Journal in the belief that they may be of use to other queen breeders and to beekeepers generally. The principal points for special consideration are:

The swarm-box hive.

1. A swarm-box hive for getting grafted queen-cell cups accepted or started.
2. The practice of "dry grafting" into artificial cups of wax fastened upon thin, flat wooden cell bases.
3. The use of a "stock hive" in connection with the maintenance of baby nuclei mating hives.

In this first article the origin and manipulation of the "Swarm-box Hive" is described.

It was during the period of 1904 to 1906 that Mr. E. L. Pratt, under the pseudonym of "Swarthmore," published his series of little pamphlets on "Increase," "Baby Nuclei," "Cell Getting," "Simplified Queen Rearing," "Golden All Over Queens," and "Forcing the Breeding Queen to Lay Eggs in Artificial Queen Cups." Mr. Wing had been making use of strong colonies (rendered queenless), from which all young brood had been removed, for starting grafted queen cells according to the early Doolittle plan. He read Pratt's little books and tried the Swarthmore swarm-box principle. Excellent results were obtained at getting grafted queen cell cups accepted and started. Under proper manipulation the rim of every cup would be drawn down with a thin edge of new wax, and after twenty-four hours almost every larva would be found surrounded with the beautiful white royal jelly. It will be remembered, however, that the bees were confined, in the case of the original swarm-box. They could not make a cleansing flight. For the best results it was therefore necessary to return all the bees to their original hive (or to use them in some other way) after a batch of queen-cells had been started. Before another batch of grafted cell cups could be introduced, the box must be filled with a new lot of bees. The process of constantly refilling and emptying swarm-boxes was laborious, wasteful of time, and all but impossible when hundreds of cells must be started daily to supply a large and growing demand for queens. Yet the fact remained that the swarm-box did "get the cells"; it did so just as well as the strong, queenless colony from which all but the sealed brood had been removed, and it was much less expensive of bees. If only this swarm-box could be used over and over without the necessity of changing the bees—and then the notion occurred: "Why not make the swarm-box in the shape of a small hive so that the bees, after their first confinement, might be released and allowed to establish themselves as a small but crowded queenless colony"? This idea was carried out. A small thick-walled hive, which would just take easily three Hoffman frames, was constructed. Into this hive were placed two frames of hatching brood and one frame (in the middle) of young brood and honey, all with adhering bees. Enough bees were included to thickly cover all three of the frames. Of course, care was used not to take the queen from the full colony. This three-frame queenless nucleus was not set aside to establish itself in the usual way. That is, the entrance was screened and the nucleus left in a cool shaded place until the third day, when it was set in the location desired and the entrance opened. Most of the bees remained with the nucleus and by about the fifth day the greater part of the sealed brood had emerged so that the little hive was crowded and running over with bees—a large proportion of them young bees. The older bees were at work bringing in nectar and some pollen. The middle frame, with its young brood which had served to start the little colony off right, was now gently lifted up and the adhering bees shaken down between the other two frames. Any queen cells started on this frame were destroyed and it was returned to its original hive. In its place in the little colony were placed grafted queen-cell cups on cell bars supported in a specially prepared Hoffman frame. The tops of the frames were sprinkled with thin syrup and covered, and thus was established the swarm-box hive—a permanent cell starter.

Once established, the swarm-box lasts the whole queen-rearing season through, and under proper manipulation it will yield a daily quota of 80 per cent to 100 per cent of started queen cells from grafted cups. It proves to be practically as efficient as the original swarm-box or the ideal strong queenless colony, and, as will be readily seen, it is much more economical in the matter of time and bees. In daily practice it is certainly more dependable as a cell starter than the upper story of a queenright colony separated from its brood-chamber by a queen excluder. Mr. Doolittle showed how such a colony might be prepared for use both as a cell starter and a cell finisher. Under ideal conditions his plan with the queenright colony does yield excellent results. In practice day after day, however, colonies kept by this plan are apt to prove much more dependable at cell finishing than at cell starting. That is to say, they will finish cells well that are already started when they will not accept and start a very large percentage of freshly grafted queen-cell cups. Mr. Wing uses such colonies, therefore, for finishing the queen cells that have been started in his swarm-box hives. After a little practice, it is easy to keep the swarm-box hive in perfect working order as a cell starter. We may designate its two combs as No. 1 and No. 2. As soon as all the brood has emerged from one of these combs (say No. 1) this comb is lifted up and its adhering bees shaken down into the box. The comb is then taken to a strong colony (preferably from the colony from which it was first obtained) and exchanged for one of sealed brood that is emerged or almost ready to emerge. By this time part of the bees will have emerged from comb No. 2 of the swarm-box and the field bees will be filling the newly vacated cells with fresh nectar and pollen—the ideal food for the nurse bees. During even a very moderate or slow honeyflow, the food presented the nurse bees in this way is so abundant that feeding is entirely unnecessary. During the time of the manipulation when started cells are taken from the swarm-box hive and newly grafted queen-cell cups are being prepared for it, the bees fill up on their freshly-stored food so well that they are all ready to cluster in masses on the queen cups as soon as these are given, and the nurse bees begin immediately to furnish the little larvæ with royal jelly. If, for any reason, abundance of new honey is not present during the manipulation just described, the tops of the frames should be sprinkled with thin syrup when new queen cups are given. As the brood in the new comb, which was placed in the position of No. 1, emerges, the bees will begin storing vacated cells with nectar so that there will be plenty of fresh food in this comb by the time it is necessary to take No. 2 away and exchange it for a new frame of sealed brood. By changing the frames alternately and working thus as occasion demands, the swarm-box hive may be kept constantly in prime state for cell starting as far as proper food and abundance of bees are concerned.

In carrying out the above practice, however, care must be used to avoid two other possible conditions which could cause failure or partial failure. First, in a yard where many virgins are mating, it not too infrequently happens that a young queen having missed her own nucleus on returning from a flight, approaches the swarm-box hive and is accepted there. This circumstance, of course, quickly changes the functional attitude of the entire unit of bees, and the swarm-box hive will be a failure at cell starting until the young queen is removed. Trouble of this kind may usually be avoided by fitting the entrance of the swarm-box hive with a queen excluder. In the second case, the bees sometimes find a young larva and start a queen cell on one of the newly introduced frames of sealed brood. This will cause partial failure on the day after the cell was started. On each succeeding day, if this cell is not destroyed, fewer and fewer grafted cell cups are likely to be accepted by the bees until practical failure results. Trouble on this account does not often arise. It may be avoided entirely by examining the frame of sealed brood again on the second day after it has been given to the swarm-box hive, and destroying any such cell before new queen-cell cups are given.

## ARGENTINE ANTS

By C. S. Ford

Have just finished reading "Glimpses of California Beekeeping," by Bevan L. Hugh, in the March issue.

Argentine ants do not destroy strong colonies, sometimes small nuclei. I have known a queen and escorts in mailing cage to stand them off for hours. They go right over crude oil, nectar flow or no nectar flow. It is coal oil that stops them, and then, if the coal oil is not at least an inch deep, they bring little pieces of rock and build a bridge. The flow of nectar does not have anything to do with it, as they live on other things. They are very fond of sweets, but dead bees and meat are what will attract them most of all. I have seen strong colonies brush aside a dozen trains of ants and the colony still keep right on working. The ants are very small and light, and the draft from the entrance blows them away. However, why have ants at all?

These ants travel in long trains and pack food back to the young all day long. Take a small stick or toothpick and dip it in Kellogg's ant paste and make two or three marks across the line of march of the ants, and the deed is done. Come back in an hour and the ants are done for. If the ants are on the hive and it is difficult to find their main line of march on account of the grass, take an old queen cage, close it all up tight and put in a little of Kellogg's ant paste; the ants will go through the screening and the result is the same as crossing their line. In the evening, after the bees have gone in, draw a few lines of the paste on side of the hives, and you have same result. But get this: Argentine ants do not hurt strong colonies.

California.

(In 1913 a bulletin of 98 pages was issued by the Bureau of Entomology at Washington, dealing with these ants. Wilmon Newell and T. C. Barber, who made extended studies of the species in the Southern States were the authors. The following statements are quoted from the above publication:

"The keeping of bees is made well nigh impossible in sections heavily infested by the Argentine ant. Single colonies of ants often contain more individuals than a colony of bees, and in addition the colonies of ants are by far the most numerous. The Argentine ants are not only exceedingly fond of honey, but they attack the bee larvæ in the cells with a ferocity that is amazing. Thousands upon thousands of the ants will enter the hive, carrying away honey and attacking the larvæ. The bees are themselves unable to cope with such small enemies."

"The number of apiaries destroyed in southern Louisiana has been considerable, and one of the first lines of experimental work was to devise some means of protecting the beehives from the foraging ants."

"One can successfully keep a few colonies of bees in any portion of the ant-infected area by making use of the special stands described, but eternal vigilance is the price of success, for when the ants do gain access to the bees the latter are likely to be disorganized within a few hours and the swarms will abscond."—Bulletin 122.

Possibly our correspondent lives in a locality where the infestation is not yet as heavy as that occupied by Mr. Wing's apiaries, or those mentioned in the above bulletin. Mr. Ford's report is the first to reach us which indicates that the bees may protect themselves from the Argentine ant without assistance.—Editor.)

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## THREE WEEKS OF BEE CONVENTIONS

By C. P. Dadant

If you wish to see a picturesque place, away from the Rocky Mountains, go to Asheville, N. C. It is located between two ridges—the Great Smoky Ridge and the Blue Ridge. Its many hills are like the waves of the sea and its waters drain, through the French Broad River, into the Tennessee. It is therefore in the Mississippi Valley. Asheville is a tourist city, has immense hotels, beautiful views and a delightful climate. The famous Vanderbilt estate, Biltmore, adjoins it.

Elton Warner, whom I visited, is one of the largest apiarists in the United States. He has some 1,500 colonies in Porto Rico, where he lived many years as an official, and some 600 in both of the Carolinas. His method of locating apiaries is original. He secures from the government, either Geological Survey topographic maps or Soil Survey maps of the different counties, and from the topography of the country or nature of the soil shown, makes a selection of the locations to be examined in detail. In this way he succeeds in establishing apiaries in the most promising spots.

Mr. and Mrs. Warner left Porto Rico to live at Asheville, because of the health of Mrs. Warner, which requires a cooler climate. They have apiaries close to them in the mountain coves or valleys, and in several places of the Coastal Plains of South Carolina. My personal acquaintance with him dates back two years, when I attended a week's course at Cornell. Leaving Buffalo in a Pullman coach, a pasenger seated across the aisle attracted my attention by his pleasant appearance. We exchanged a few words and I was astonished then to hear him say: "I believe this is Mr. Dadant." We chatted all the way to Cornell and roomed together there; we promised ourselves to visit each other at the first opportunity. This was what drew me to Asheville, for a short stay between bee meetings.

One of the important requirements in a large producer who keeps more bees than he can care for himself, is executive ability. He must be able not only to teach the indispensable performances, but also to select men of action who will promote his interest at all times. Such men may not be found everywhere, and they are of more value than the fellows who are constantly studying how little they can do for the money they get.

A good share of Mr. Warner's success is without doubt due to his business ability and to his loyal and efficient helpers. Several of his men have children nearly grown, who were literally "born and raised" in his apiaries.

We rode back and forth through the city, until I became quite well acquainted with it. Yet if there is any town with a labyrinth of streets running in all the directions of the compass, it is surely Asheville. We talked bees, of course, and I am giving, in another article, Mr. Warner's experience in transporting queens, for he has shipped back and forth several thousand queens for and from his Porto Rican apiaries. He confirmed my opinion that young queens dislike to lay drone eggs, by stating that he had seen such young queens refuse to lay in drone cells, although the drone comb had been placed in the center of the broodnest.

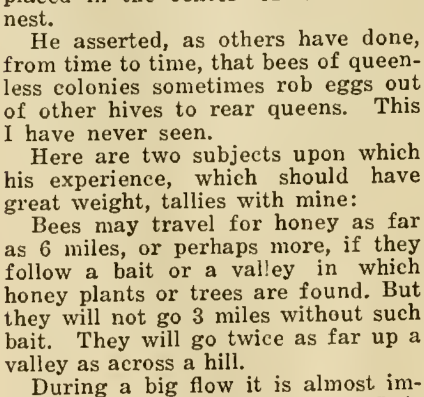
He asserted, as others have done, from time to time, that bees of queenless colonies sometimes rob eggs out of other hives to rear queens. This I have never seen.

Here are two subjects upon which his experience, which should have great weight, tallies with mine:

Bees may travel for honey as far as 6 miles, or perhaps more, if they follow a bait or a valley in which honey plants or trees are found. But they will not go 3 miles without such bait. They will go twice as far up a valley as across a hill.

During a big flow it is almost impossible to overstock a location. It is between the flows that a location may be unsatisfactory for a large apiary, as colonies are likely to suffer from the overrunning of a short pasture.

Since I propose to return to the Warner experiences in beekeeping, I will now proceed to the last of the meetings of my 3 weeks' trip, that of Nashville, Tenn. I arrived there the day before the meeting and made several valuable acquaintances.



"EARLY PREPARATION"
Drawn by Marion Grace Brittain, a Washington girl of 12 years.

One of the reasons of the success of the Tennessee meetings is the activity and determination of the Entomologist, Prof. G. M. Bentley. He appears to be the propelling power, not only of the beekeepers' conventions, but of several others, horticulturists, entomologists, nurserymen, etc. He is an example of good selection by the associations who are under his management.

The program was full and well carried on, though some of the best speakers were missing. But there were plenty of good ones left. W. R. Walling, of Knoxville, Tenn., who keeps bees in Harding, Mont., during the summer, then puts his bees in winter quarters and comes home every fall to sell his crop, was one of the good producers there. His subject was "Producing Honey by Tons." He does.

Mrs. Grace Allen, the contributor of a department in Gleanings, had her usual delightful annual address, which she always delivers in an exquisite manner. She was the prime mover in the step taken by the Tennessee Association to join the American Honey Producers' League. They had only $29 in the treasury, but she aroused the enthusiasm so that the subscription of $100 was covered in less than 15 minutes.

Here I met for the first time Tom Lewis, grandson of the man who originated the G. B. Lewis Co. He represents the third generation of the same family in the bee business. That should make me feel old, for I did business many years with his grandfather. Mr. Lewis reported a little experiment of his, made at Memphis, where he resides. He made some very light shavings of beeswax. These he placed in a dish with a little syrup poured on them, at the time of comb building, and placed this over the colony which had been given sheets of foundation. They took it readily and finished 8 combs in 18 hours.

I went home from this extensive trip, on the 28th, but a week later I was again at another meeting, Manhattan Farmers' Week, in Kansas. More live wires, and more progress! The world does move!

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## THE FARM EXTRACTING PROBLEM

By L. H. Cobb

Working for extracted honey looks good to most farmers who have become interested in bees with the intention to make the most from them, but the cost of an extractor for the small number of colonies that most of them plan to keep looks prohibitive. This is one of the difficult problems for the small producer to work out, and it has prevented many from giving bees much consideration. They do not want to work for section honey or comb honey in frames, and they do not think they are justified in buying an extractor.

Several years ago, in Oklahoma, when bee pasture there was not very good, I had an apiary of a couple of dozen stands and an extractor. Some four or five other people around had from two to fifteen colonies each; they had no extractors, and they would borrow mine. I loaned it willingly enough, though it was somewhat of a nuisance to keep this up year after year. Now it was an easy matter for the whole of us to use that extractor and as many more could have used it without much inconvenience to any of us. This suggests a method by which farm communities can overcome the difficulty. They can own an extractor in partnership. This is much fairer than borrowing, and there is nothing about the extracting that will work much of an inconvenience in passing the machine around. Honey does not have to be extracted at any certain time, and it will not lose flavor or value if left on the hives or stored in a warm, dry place in the frames.

Another point farm beekeepers should aim at in working for extracted honey is to have full frames throughout their whole equipment, for it is no more trouble to uncap and extract a full frame than a shallow extracting frame, and you get so much more honey, thus cutting down the labor. The extractor pockets take a full frame as well as a shallow frame, and when we are using frames any way for storing the honey I can see but little advantage in using supers and shallow frames except the weight of the filled super. A full-sized hive-body filled with ten full frames of honey is heavy to handle, but it will be easy to take out frames, or we can make an overhead pulley and hooks to catch the hive, and thus make it easier yet. Having all the frames alike simplifies the equipment greatly. Then the frames are interchangeable, and can be used for brood or honey, as we think best.

Kansas.

## HONEY GATHERERS IN MID-FEBRUARY

By A. C. Burrill

A visit to apiaries near Poplar Bluff, Mo., showed, on February 15, 1921, that both pollen and nectar were coming in freely in this foothill region of the Southeast Missouri "sunk lands." One beekeeper has adopted the two-hive-body stand for wintering and had an extra large swarm at work inside. About eight frames had fresh nectar in the cells, very few of which had just been capped. This was roughly equal to two full frames of new honey and about one-half frame of bee-bread, made out of a whitish green pollen. As only a few soft red maples had been noted blooming, it was rather a mystery where this record early flow of the season was coming from, the swamp maples in the overflow lands or the town red maples. The warmth of the three days, February 13-15, broke the Topeka, Kans., record for high heat in February. No dandelion or other flowers were yet out, save a leafless ornamental bush with yellow bloom, not unlike flowering currant, but larger flower bloom, noted at the shoe factory plantings at Poplar Bluff.

The unusuaully warm winter, coupled with the poor fall honeyflow, resulted in the extinction of one colony entirely, due to starvation from lack of stores. Until there is unlimited sweet clover nectar on waste lands, to provide a nectar flow in late summer drouths, Southeast Missouri beekeepers are confronted with a serious problem in seasons like 1920. It is doubtful if the recommended Federal winter packing could have availed much in saving some strong colonies in a winter so warm and open as 1920-21, since there was such shortage of stores.

A little sealed brood confirmed the suspicion that brood-sealing began in January. Mr. Julius Nebel says there has never been a time all winter when there was not a little brood rearing going on at Jackson, Mo.

Missouri.

## THE LEAGUE AT WORK

By H. B. Parks, Secretary

Before this article reaches you, the League Bulletin will be in the hands of a large number of the beekeepers of America. If you have not received a copy, write for one. The League wants every beekeeper to know just what it stands for, what it plans to do and what it is doing. The Bulletin will give you this information.

Many think the League is organized as a huge selling machine, planning to handle all of the honey produced. This may never come; if it does, it is in the very distant future. It is not the idea of the present movement to propose such a thing.

The policy of the League is to sell through regular channels of trade and where none exist, create such out of the already established grocer's trade. It is the future production and the future sale of honey the League is planning for. If the bee industry grows, there must be a great enlargement in the sale of honey. Talk as you will about honey not being in competition with sugars, syrups, jellies and jams, it is and always will be. Honey must sell in a reasonable ratio to these commodities. Thus, to create a great demand for honey its claims must be put before the public. It must be available and its price must be right. If the producer can obtain 8 cents per pound for every pound of honey he can produce and get that price when he offers his honey for sale, he has a paying proposition. No League or private firm could finance a corner on the honey market and force its sale. So the League has determined upon the policy to nationally advertise honey, to help State and county organizations in increasing the local demand, and to keep all sellers of honey informed as to when and where to sell. The above may seem at first a queer statement, but is not so queer as it may seem. Honey, in many places, is a quick money crop. In many places only small amounts are raised. In these localities, when the honey crop is taken, the market is well supplied for a short time and a trade is developed. When the supply runs out there is no more honey until next year. It is in this kind of a place that if honey were shipped in as soon as the home supply ended, advantage could be taken of the already established trade and continuous sales be made. Only a body such as the League can ever give this service.

The League advertising campaign is on. The time seems ripe for it. You will notice in the bee magazines that men knowing little or nothing about the work of the League are proposing such a scheme. The League has the machinery in action. It has already a fine start. Your State Secretary will give you a chance to help. If you believe in beekeeping and beekeepers, support the advertising cam-

Marion Grace Brittain, the 12-year-old girl who drew the picture on the opposite page.

paign of the League. If you want to help, personally tax yourself 5 cents per colony and mail your check to the League Secretary.

The League movement has caused activity in regions where beekeeping is seldom heard from. Letters from beekeepers from everywhere indicate this interest. Many of the States not known as honey producers will be League members before some of the more noted ones. The result is easy to be seen. These men are developing their own market and creating a market for others.

San Antonio, Texas.

## SALT FOR BEES

While making some observations along a roadside, the previous season, I made casual acquaintance with a man whose name and address I regret to state I failed to procure. We soon became absorbed in conversation concerning bees and of the things which he said, the following impressed me greatly:

"I worked for years with a man in the East (east Pennsylvania), who had great success with bees, never having any bee disease or winter losses, and the bees were just as tame as kittens; this was due to a discovery the bee man had made and held secret from others, but seeing that you are interested I will tell you. If you want to have success, see that your bees get salt."

That was the secret. That salt plays such an important part is doubtful, but that it has some effect I am almost positive. Following the receipt of this "secret" many experiments were made and results tabulated.

Dry salt was not noticed. Moistened salt was lapped by a few bees. A heavy salt solution was ignored, even though it was covered with burlap, so as to keep the cloth moist. A lighter solution was somewhat successful, but not sufficiently so to render carrying on further experiments profitable, and for a time no consideration was given the subject.

Some time later, bees were noticed frequenting a swampy place to the exclusion of several others near by. Examination of the soil showed it to be slightly saline, merely perceptible to the taste. Spurred to other experiments by this, handfuls of salt were placed or scattered on several nearby swampy places, and the number of bees that frequented the salted swamps a few days later convinced me that salt is important. The late season prevented further study.

Whether bees require salt for brood rearing, or at all times, the short observation period did not reveal exactly. No doubt other beekeepers will be able to give further information after this season.

J. W. Nordstrom.

Pennsylvania.

### Another Observation

I am located on a sheltered harbor in western Washington, and during the summer everyone here notices bees on a seaweed and grass next to the water, evidently after the salty water.

Richard J. Thaine.

Washington.

### Wisconsin Bees Like Salt

Replying to Daniel Danielson's article, February issue, "Do Bees Need Salt?" permit me to say: whether or not they need it, one thing is certain, they surely like it, and I doubt very much if the Government Experiment Station knows any more about it than observing beekeepers do.

When I embarked in beekeeping we had numerous springs of pure hard water on the farm and the bees watered at various places. Then a salt barrel was installed under the eaves of the house to catch rain water for washing, and after it was soaked and wet thousands of bees patronized the outside of the staves and around the top as a watering place.

For the last 25 or 30 years I have kept a candy pail in my beeyard filled with pure but hard well water in which a good big handful of salt is dissolved, and covered with cork chips, and while this is more or less patronized from early spring to late fall every day, yet at the same time the majority of the bees carry water from seeping springs 15 or 20 rods distant. They seem to be very anxious for the salty water, yet by putting in two handfuls they will quit, and if none at all is used they scarcely notice the pail. What they seem to desire most as a watering place is pure black mud or sand thoroughly soaked and warmed to some extent by the sunshine, and barely possible some such places may contain the requisite amount of salt used in brood rearing.

Elias Fox.

Wisconsin.

## DIVERSITIES

### By E. P. Stiles

On page 64 of the American Bee Journal for February, Mr. Arthur C. Miller, of Rhode Island, recommends the oiling of the stiff leather of bellows smokers with "neatsfoot oil, or any oil or grease." That is good advice in some parts of the North, but not so good for the South. Numerous varieties of ants in the South are very destructive to leather greased with any animal grease, especially that greased with tallow. Users of bee smokers should, first of all, not leave these indispensable instruments exposed to rain and sun. If, in time, the leather needs oil, vaseline, in the South, is far preferable to animal oils, as it makes the leather obnoxious to ants and some other Southern insects which destroy leather.

Again Mr. Miller says: "Scrape all the propolis from the frames, just to facilitate handling next season as well as to insure accurate spacing." Of course Mr. Miller is referring to Hoffman frames. If propolis was as abundant in Providence as in Austin, he wouldn't use Hoffman frames at all, not even if he had to move his bees two or three times a year.

So far south as this, the beekeeper has very little "slack time," in fact, if he acts on Mr. Miller's wise suggestions, for which I thank him, he will have no slack time at all. This advice is, however, two or three months too late for us. Work in the South for 1921 has begun. Today (February 9), at Austin, Texas, I find several combs of sealed brood in my colonies. A month ago there was not even an egg. Bees are bringing in pollen and honey from several trees and shrubs when the weather permits.

Texas.

### Government Position Open

The Civil Service Commission announces an examination for the position of Apicultural Assistant in the U. S. Department of Agriculture, with salary of $2,250 to $3,000, for work within the department or in the field. Those interested should apply at once to the Civil Service Commission at Washington, stating the position for which they wish to qualify.

## BEEKEEPERS BY THE WAY

W. A. Weir, of Toronto.

### A Handy Canadian

W. A. Weir, of Toronto, is the fellow the Canadians fall back on for most any emergency. On two different occasions, when there has been a vacancy in the position of Provincial Apiarist at Guelph, Weir has been called upon to keep things going until the place could be filled. Likewise he has served as editor of the bee department of the Canadian magazine published for the purpose of serving the mutual interests of fruit growers and beekeepers.

Weir lives in the city, and in company with his brother has a line of outyards within reach in the surrounding country. The honey, for the most part, is of light color and fine quality and the local market takes a large portion of the crop.

## HIGH YIELDS FROM COLONIES HAVING SWARMED EARLY

By F. Greiner

Under normal or ordinary conditions almost every colony makes the attempt to swarm. After the creation God said: "Be fruitful and multiply." All creatures obey this command. The instinct to propagate its kind was imparted unto every living thing, the bee included, and we cannot get away from it. The modern beekeeper would like to control the instinct of the honeybee, which he cultivates or keeps, as the case may be. Especially is this true in case of the comb-honey producer who is pestered in a greater degree with the swarming nuisance than one who produces extracted honey. He might have plain sailing if it was not for that trouble, and all our methods of successful comb-honey production center largely around it. In this article I do not intend to deal with the different methods to produce comb honey, but confine myself to one emergency method, which gives me exceedingly gratifying results. If one of my readers should have occasion to use it, even on but one colony, the extra gain will pay for his Journal several years. When we visit our bees in early May when the fruit trees bloom, it is not an unusual occurrence to find here and there a colony having already swarmed and the swarm having absconded. Of course this is quite a loss, and we can do no more than to save the pieces. I sometimes utilized the queen cells or broke up the whole colony into nuclei or mating colonies. I have reared very fine queens in this manner. But I did not care to handle the colonies I found in my yard this season this way; they had good queens, to be sure, but were not of pure Italian blood. I resorted to the entrance guard to prevent further swarming for the time being. I have learned not to depend on the cutting out of queen cells to prevent afterswarms. I have made too many misses. With the entrance guard I acomplish the object much easier. So these were adjusted. Three or four days later I returned to the yard. There were a number of other colonies which were making preparations for swarming. These had to be shaken or brushed or driven and were so treated, for this is our method of forestalling swarming. The so gained beeless brood-combs were placed over an excluder upon the colonies having cast the formerly mentioned runaway swarms, two brood-chambers full to a hive. Before doing so we made an examination to see whether or not the queen cells had hatched or were destroyed. Not until this is done can the entrance guard be removed with safety. After the beeless brood-combs are so placed upon the colonies, the bees from below will soon cover them and young bees will be hatching day after day by the thousand and fill up their hives with an abundance of them. At 5 days old they make their first flight. They do this for the two-fold purpose of voiding their accumulated feces and to mark their location. It is said, and it is orthodox teaching, that honeybees do not become field workers until 16 or 18 days old, doing house work during this time. But the condition in these hives is rather abnormal and there is really little house work to be done, although there are three brood-chambers to take care of; but the lower hive-body contains no open brood; in the upper two the open brood is constantly decreasing and soon all is sealed. What would you expect this vast number of young bees—full-fledged bees—would busy themselves about under these conditions when there is plenty to do out of doors? Let me tell you. They have horse sense enough to take hold and do any kind of work that needs doing. It is an undisputed fact that old bees under the stress of circumstances will attend to the kitchen work, nurse the young, etc., and these young bees, now 5 days old, will go out and gather honey and pollen in the fields in common with the older sisters. How do I know this to be so? If you will try the experiment outlined, you will find that these colonies with this disproportioned large number of young bees will beat any of the other colonies in the game of storing comb honey in the yard. But I have other proof. Some years ago my experiment was published of how I built up a colony of young bees **only**, bees just emerging from their cells. By carefully watching this colony I found that bees became field workers under these abnormal conditions when 5 days old. The proof was convincing, and I believe, considering the other evidence, that the same happens in the colonies under the described treatment. But now to return to these colonies. On the 12th day, after the extra hive-bodies of brood were given them, they were removed with the bees therein and given new locations for the purpose of forming increase. It pays to give these new colonies queens. Thus favored, they will build up and give an account of themselves during the buckwheat honeyflow. If no queens are at hand, queen cells would be given. It is a simple way of forming new colonies. Remember, now, that all the bees 5 days old that had formed or marked their location, will return to the hives they were moved from. Provision must be made that they will find a suitable place to expend their energy, and section cases, all sections filled with full sheets of comb foundation, are at once given, for the white clover flow has by this time begun. Attend to it, that these colonies with this host of young bees will not lack store room, and remove all honey **as fast as finished.** I observed recently in an illustration, a colony of bees having 15 or 16 section cases on, piled up so high that a step ladder was needed, also shown in the illustration, to reach to upper supers. Do not make such a mistake as piling up supers 15 high, even if you are fortunate enough to have such a yield. I have taken that many full section cases from single colonies, but never had more than four on the hive at any one time. From such colonies as I have described in the foregoing it will not be impossible to reap such a yield.

New York.

## COLLEGE GIRLS BOOST HONEY

By F. B. Paddock

On Saturday, February 12, Home Economics Day was celebrated at Iowa State College. This annual event is prepared for by more than a thousand girls and looked forward to by twenty-five hundred boys. The Home Economics building is filled with exhibits to display the work of the girls in the college course. One has an opportunity to view the styles of today, labor-saving devices in the home, a good and a poor dinner, and to taste the excellent cooking of the future home-makers.

Among the courses required of some of the girls is a general elementary course in beekeeping. Although some girls shudder at the thought of a bee and its sting, yet it is remarkable how many of these college girls have had somewhat of an acquaintance with bees. In the work of the beekeeping course the girls have proved to be very apt students and in time overcome a large part of their fear of stings. There is a phase of the work which especially appeals to the girls—that of honey and its utilization. These girls are taught nutrition and food values and they are ever keen to learn all about all foods.

Of the students to recently complete the course, Miss Imogene Dean became exceedingly interested in the uses of honey in the home. The class room work was supplemented greatly by baking cakes and cookies and making candies at home. One of the exhibits found in the Home Economics building on February 12, was bees and honey. This was on a large table, and attracted the attention of everyone who visited the building. There were those girls who expressed the desire to see a real queen with her circle of attendants and those loitered around the observation hive for a farewell glimpse of the royalty. Some of the boys were interested in the samples of honey collected from California, Utah, Louisiana, Florida and many other States. Often those of artistic turn of mind admired the oil painting made by Dr. A. F. Bonney. There were housewives who were very much interested in the grades of extracted and comb honey, as well as the commercial packages of honey. All of these phases of the exhibit had a special class of interested spectators but there was not a single visitor who was not interested in the wonderful display of cake, cookies and candies made with honey. The girls viewed with envy, the boys viewed with a lingering longing and the housewife with serious interest. Calls for recipes were numerous and lengthy inquiries were handled by Miss Dean, who was ever willing to explain in detail how honey had entered the make-up of these good things to eat. The tempting appearance of that lovely cake with the end slice lying down will long be remembered by all visitors.

This is the first time that honey and its uses have been brought to the attention of those at Iowa State College. The success of the exhibit is due to Miss Dean, who is ever tireless to urge the extended use of honey in the home.

Iowa.

# THE EDITOR'S ANSWERS

When stamp is enclosed, the editor will answer questions by mail. Since we have far more questions than we can print in the space available, several months sometimes elapse before answers appear.

### Removing Honey—Swarms, Etc.

1. What method is practiced among the large beekeepers of emptying the supers of bees when taking off honey?

2. Late in the fall, when one is taking off honey, would it be a dangerous practice to feed one's bees the scraps in the open and to let them clean up the supers and frames before putting away for winter?

3. I use the regular ten-frame hive with single-wall and Excelsior cover. Do you think that it would be a good plan for winter to wrap hives in tar paper and to put a piece over the top of hive? Would the black paper draw the heat too much when the sun was shining, and we happened to have a nice, pleasant day?

4. I have always tried to give my bees plenty of room early in the spring, but seem to have too many swarms come off; I only put on one empty super at a time. Do you think that it might help to put on two, early in the spring? Is there any objection to tiering up a number of empty supers on one hive?

5. Suppose a hive did not swarm for a number of years, say two or three, it would, I believe, still have the original queen; in this case, should one introduce a new queen?

6. Do bees really work on the weed commonly known as Spanish needle? I was told by an old beeman that, contrary to the common belief, they did not work on it. He told me to let him know if I ever saw a bee on a single plant I have looked for it a number of times, but have never discovered a single bee on a Spanish needle blossom.

7. Suppose one had a very strong colony that had not swarmed had three supers on and seemed to be literally overflowing with bees, could it be possible that there be so many that, when closing down for winter, the brood-chamber would not hold them?

8. What causes a large number of bees to come out of a hive and circle around almost as though they were going to swarm? I have one hive in particular that I have noticed doing this—one of my best colonies.

9. Are diseases apt to appear in a small apiary? I have had but little experience, but have never lost or had a diseased colony.

MISSOURI.

Answrs.—1. Use a bee-escape, between the supers and the hive body. Put it on, the afternoon previous.

2. Some people practice giving the emptied supers for the bees to clean, in the open. We have never liked it, as it causes them to try robbing. Try both ways and decide for yourself.

3. Yes, tar paper makes a very good protection. It would not be too warm at any time, except summer.

4. The number of supers to put on should be according to the strength of the colony and the crop expectation. Dr. Miller sometimes put 2 and 3 supers on very powerful colonies.

5. Yes, if the queen has not been superseded by her bees and a young one reared, it is best to change her.

6. Bees work on some kinds of Spanish needles an not on some others. It is the same with goldenrod. We rarely see bees on the goldenrods that grow here, but in some localities they produce a large crop. Even the same plant will not produce honey equally in every location We have never been able to secure alfalfa honey here. But we have harvested thousands of pounds of Spanish needle honey

7. No, we have never seen a colony so overflowing with bees that they would not all be held in the brood-chamber for winter. Such strong colonies are very desirable.

8. Those are the young bees taking their first flight, from strong colonies, usually in the afternoon. You will find that information in any text book.

9. Diseases do not depend upon the size of the apiary; but I kept bees for 40 years before I ever saw any foulbrood.

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### Swarms Clustering

In the October number of the American Bee Journal, in reply to a question, you give a reason for bees forming a cluster when the swarm first leaves the hive, and ask if any one knows a better explanation, that he give it. John Burroughs, the American naturalist, states that he believes that they send out scouts to find a new hive, the rest of the bees clustering meanwhile, and as soon as the scouts return the swarm leaves. I cannot tell you in which of his books he states this, for it is found in one of four essays on "Birds and Bees," selected from his works and published together in a classic for study in high school English classes. This was when I first acquired an interest in bees.

KANSAS.

Answer.—The suggestion which you ouote from John Burroughs about the question on page 351, was already made by Mr. Langstroth. See paragraph 415 of the revised edition. However, it is a fact that first swarms always settle, although there is out little doubt that scouts hunt for a home as well before as after swarming. But Mr. Langstroth wrote, paragraph 419 of the Revised Edition:

"The fact that the bees have clustered makes it almost certain that, unless the weather is very hot, or they are exposed to the burning heat of the sun, they will not leave for at least one or two hours. All convenient dispatch, however, should be used in hiving swarms, lest the scouts have time to return, which will entice them to go, or lest other colonies issue, and attempt to add themselves to it."

However, the fact that secondary swarms rarely settle would indicate that the weight of the old queen has some influence upon their action.

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### Feeding

1. I have three swarms that I got in August, too late for them to gather enough honey for the winter. I have been feeding them sugar and water, equal parts; they will take a cupful, each swarm, three times a day, and they have filled some comb and sealed it, but don't seem to have used half the amount that I have given them to put in combs. Where do you suppose they have put it? Or do they eat that much while feeding?

2. Two of my swarms are large. I plan to divide them, each into three swarms, and give each an Italian queen, in the latter part of May, as I want to increase and get more colonies. Will that be practical?

3. In buying a pound of bees, and queen, and hiving them the last of May, will they gather enough honey for the coming winter, if it is a good honey season? Or would they gather enough to use a super for them? I intend to put them on full sheets of foundation in frames.

4. Upon examining the frames in one of the large colonies, I did not find any brood in the cells. Is there a time of the year when the queen does not lay eggs?

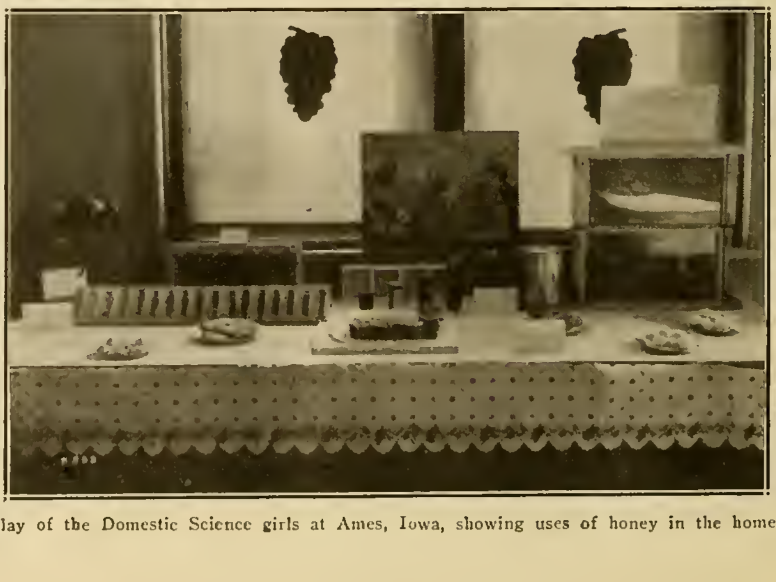
5. Can I leave the super on and put some section honey there, and will they find it in case they run short of sugar syrup? I have a good dry basement, and plan on wintering them there.

6. Is dandelion honey good for winter feed?

IOWA.

Answers.—1. You have used twice as much water as necessary and they have evaporated it. That is why there does not seem to be as much in the cells as you have given them. Use half as much water or twice as much sugar.

2. It is impossible to advise this early as to how many colonies you can produce from each one of your colonies, spring count, because you do not know, neither do I, how weak or strong they will be in May. Don't divide too much. Make one division from each, when they are strong, and another later if they fill their hives. Of course, the better



Display of the Domestic Science girls at Ames, Iowa, showing uses of honey in the home.

you take care of them and the more foundation you give them, the quicker they will build up.

3. It is out of the question to tell you whether your swarms will fill the hive, or whether they will make a lot of surplus or starve. All depends upon the season and upon the care you give them.

4. Certainly, the queen ceases laying, usually in October, until the first warm days of early spring.

5. Yes, but it is better to have the honey in the brood-combs, especially in the cellar.

6. I don't know. I have never wintered any on dandelion honey. Do any of our readers know anything about this?

### Introducing Queens

1. I raised a few queens last summer. I had no trouble in introducing some, but some of the colonies I tried to requeen would swarm about two weeks or so after I put the new queen in. I also had a few that didn't accept the new queen and are now queenless and worthless. I introduced the queens in a cage. What do you think the trouble was?

2. When I open a hive, usually the bees, or quite a lot of them, will fly out and sting wherever they get a chance. Is it just that the bees are cross, or could there be something else? WISCONSIN.

Answers.—1. Either the colonies were too strong and wanting to swarm when you introduced your queens, or you made them queenless a few days ahead of introduction, in which case they reared queen-cells and would, of course, reject the new queens. You should examine colonies within 2 or 3 weeks, or even sooner, after introducing queens, and if they are queenless, give them another queen or some young brood, so they may rear one.

2. When you open a hive, you should at first smoke it carefully at the entrance, so as to frighten the guards. Many people overlook this requirement, with the result that they have angry bees around during the entire manipulation. If your bees are more cross than the average, you should use more smoke on them. They can be tamed. Read a book on this subject.

### Keeping Honey

1. How and where is the best place for an ordinary farmer with only a few bees, to keep comb honey? I have 5 stands of bees and will have about 150 pounds of honey in sections. I wish to keep it for my own use, but I am afraid of moths.

2. Does an 8-frame hive hold sufficient honey to winter a swarm, or would it be better to leave some in the super? KANSAS.

Answers.—1. A dry place, such as an attic, or an upstairs room, or a closet in the kitchen, is good to keep comb honey. If you suspect that the moths have laid eggs about the boxes, put them in a tight closet and spread a little bisulphide of carbon on a rag in the closet; or, if you prefer, in a cup. It will evaporate and smother the moths. Do it again in a couple of weeks. In winter there is no longer any danger, as the moths cannot enter your rooms. If you cannot get bisulphide of carbon, burn some brimstone in a metal dish. You can buy the brimstone from any druggist. Do not bring a light next to the bisulphide of carbon, as it is inflammable like gasoline.

2. An ordinary 8-frame hive, if the combs are one-half to two-thirds filled with honey, will have enough to winter a colony. The bees probably will need more in spring, however, before the honey crop.

### New Law for Montana

Montana is one of the latest of the States to provide a law for the control of bee diseases. There are few States which do not now have some provision of this kind.

## ODDS AND ENDS

### Nevada, Also

Washoe County, Nevada has a local organization which will meet the third Thursday in each month at Reno. George G. Schweis is President, O. D. Downin, Vice President, and L. D'A. Prince, Secretary.

### Sugar Maple

The Department of Agriculture of the Province of Quebec classifies the bee industry with that of the sugar maple, both of these industries producing sweets of high quality.

We have before us a bulletin upon the maple sugar industry, from that Department, in French, entitled "Nos Erablieres" (Our sugar maple camps), written by C. Vaillancourt. It is quite interesting and shows the methods employed in the extensive maple groves of Eastern Quebec, to produce maple sugar on a large scale. The typical sugar camp of Quebec appears to be that of L. J. A. Dupuis, in the Comte l'Islet, about 75 miles from the City of Quebec, almost on a line with the northern limits of the State of Maine.

### Oregon Convention

The Oregon State Beekeepers' Association met in Portland March 16 and 17, with an average attendance of well over one hundred. Considerable enthusiasm and interest were shown at the meeting and efforts are being made to form local and county associations in various portions of the State. Some fifteen or sixteen counties were represented at the meeting. The following officers were elected:

President—A. J. Sanford, Redmond, Oregon.

Vice President—K. D. Baker, Nampa, Oregon.

Secretary-Treasurer—H. A. Scullen, Corvallis, Oregon.

Definite steps are being taken to join the American Honey Producers' League in the near future.

H. A. Scullen, Secretary.

### Good Year in California

This past winter has been the best one for many years. We have had plenty of rain and very little frost.

The almonds started blooming early in February and they were closely followed by the peaches, prunes and apricots. The pears are still in bloom and the bees are also working on wild mustard and burr clover. Alfalfa is knee high and will be blooming in a few weeks. The oranges are budding and soon the beekeepers will be moving to their midst.

When I examined my bees on March 15, I found that in most of the colonies at least eight or nine frames were covered with bees and they had about six or seven frames of brood. In some I found that queen-cells had been started. I destroyed them to prevent swarming, but I neglected cutting them since, and today, March 28, a fair sized swarm issued. I hived them on drawn combs and they seem quite contented.

There is some disease, but the beekeepers have it under control, so with the promise of a good honey crop, they are in good spirits.

Glenn Ensign.

California.

### A New Organization

The Cook County, Illinois, Beekeepers' Association was organized at a meeting of one hundred and fifty local beekeepers on March 21, at the Great Northern Hotel, Chicago.

The officers elected are: S. Cushman, President; C. O. Smith, Vice President, and A. G. Gill, of 230 W. Huron Street, Chicago, Secretary and Treasurer.

### More City Bees

The Harrisburg, Pa., Telegram, in a recent issue, gives an account of three colonies of bees kept at the car barns in that city by A. F. Rexroth. These bees produced an average of 150 pounds of honey per colony last season. Incidentally, there was some good information about honey and bees which should be interesting to the readers of that paper.

### South Dakota Beekeepers Meet

Vermillion, S. Dak., March 10. The South Dakota State Beekeepers' Association has just concluded a two-day session here. The President, Ernest W. Fox, of Fruitdale, in the Black Hills region, gave very interesting accounts of his methods in securing large yields of honey year after year from sweet clover. Mr. Atkins, of the Lewis Company, gave a number of instructive talks on technical operations in beekeeping, and Mr. Southworth, of the Western Honey Producers, Sioux City, Iowa, gave an interesting account of swarm control. Prof. J. C. Tjaden, of the State University, gave an illustrated lecture touching on a number of specific problems of apiculture. Mr. R. A. Morgan, who has had more bee experience in this State than anybody else, gave it as his opinion that South Dakota's possibilities in honey production are exceeded in no other State. Mr. McBride, who recently came to this State, after extensive experience in other States, including the South, gave the same opinion. Among the leading topics touched upon quite fully may be mentioned legislation relative to standardization of grades and packages; legislation toward the control and suppression of bee diseases, and organized membership drives. The officers for the coming year are Ernest W. Fox, Fruitdale, S. D., President; E. L. Borton, Scotland, Vice President, and Prof. J. C. Tjaden, Director of the Extension Division, State University, Vermillion, S. Dak., Secretary. The next annual meeting will be held at Mitchell, Brookings or Yankton, the final choice to be announced later.

### Early Annual Sweet Clover

F. A. James, of Alabama writes that annual sweet clover seed dropped last fall came up in December and bloomed on March 4. No plant in recent years has attracted such widespread interest as this annual sweet clover. Several firms are taking advantage of the big demand and high price for seed to plant considerable areas, which will be cultivated in an effort to increase the yield.

### A Big Crop

According to California Cultivator, Riverside County produced 820 tons of honey in 1920, which was sold for $328,000.

### Mississippi Organizes

The Yazoo and Mississippi Delta Beekeepers' Association is the name of a new organization which recently came to life. W. E. Elam is President and Thos. Worthington Vice President.

### Wild Bees

A party of seven from Portland, Ore., and from New York City, called at my home to come to their place about six miles south from me to take a wild swarm of bees which were in an old cedar tree about 8 feet at the roots and about 80 feet up in the tree. The tree was hollow about 65 feet and from 22 to 18 feet of empty space—a fine home for bees. We felled the tree over a canyon and I had an empty hive handy to save the bees. To my surprise, we did not damage the comb or the bees.

I took out 232 pounds of honey and comb together, and about the biggest bee family I ever took out from the wilds. I put them in an attic, gave them 10 frames of drawn comb and fed back about 39 pounds of the honey. They are building comb right now as I feed them. They are the leather colored Italian. The bees have been over 11 years in that tree, and as healthy as any swarm could be.

Geo. Jenison.

Oregon City, Ore.

### Minnesota Rears Queens

The Bee Division at the University of Minnesota is rearing queens for Minnesota beekeepers in an effort to improve the stock of the State. Not more than five queens are sold to one beekeeper, and only one tested queen is sold to an individual. Time of delivery and prices at which they may be had, may be obtained from Francis Jager, Chief of the Division at University Farm, Minn.

### A Courteous Mayor

The Mayor of Oakland, Cal., issued a proclamation designating the first week in March as honey week, in honor of the convention of the California beekeepers which met in that city.

### Pennsylvania Beekeepers, Also

The beekeepers of Lehigh and adjoining counties recently organized with A. L. Brodhead President, J. E. Linde, Vice President, and O. E. Urffer, of Emaus, as Secretary.

### New Association in Oregon

The beekeepers of Linn and Benton Counties, Oregon, recently organized the Linn-Benton County Beekeepers' Association with the following officers. Mr. George Collins, Albany, President; W. C. Christie, North Albany, Vice President, and John Blasser, of Lebanon, Secretary.

### Census Returns

Connecticut had 6,960 colonies of bees in 1919, as against 9,445 in 1909. The 1919 honey crop was 83,091 pounds, or a per colony production of 12 pounds.

Missouri has 157,678 colonies, as against 203,569 in 1909. The honey production for 1919 was 1,220,611 pounds.

Tennessee has 191,898 colonies of bees, as against 144,481 colonies in 1909, and the honey crop for 1919 was 1,969,425 pounds.

Alabama ranks below Tennessee, having produced 1,347,644 pounds of honey in 1919 from 153,760 colonies of bees. The number of colonies in 1909 was 135,140.

But look at Hawaii, 14,608 colonies of bees in 1919, with a honey production of 953,375 pounds, or an average of 65 pounds per colony. The largest average of any State reporting so far is Idaho, with 34 pounds per colony. Evidently all beekeepers are modern in Hawaii, with no box hives to pull down the average.

### Maine Beekeepers

At Auburn, on February 15, was organized the Maine State Beekeepers' Association, with the following officers: President, Lester W. Longfellow; First Vice President, O. D. Griffin; Second Vice President, W. L. Maloon; Secretary, F. L. Mason, Mechanic Falls; Treasurer, H. W. Mat-

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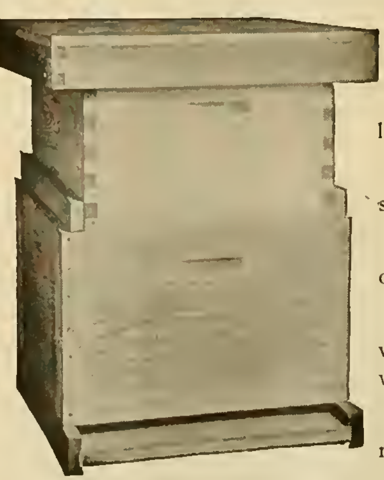

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thews. Mrs. Ella Stockman, J. Putnam Stevens, Frank H. Dudley, State Horticulturist, together with the President and Secretary, ex-officio, form the Board of Directors.

The immediate object of the Association is that there may be an organized effort in support of a foulbrood law which is fortunate to have the support of State Horticulturist Frank H. Dudley, and it will be under his department that the inspection work will be carried on.

### January Exports of Honey

The United States exported 207,654 pounds of honey valued at $29,641 during January, 1921, as compared with 282,016 pounds valued at $27,829 during December, 1920. Belgium was the chief purchaser, taking 142,413 pounds, or 69 per cent of the total amount exported. Germany furnished the next most important market, taking 31,743 pounds, while England and Canada took slightly more than 14,000 pounds each.

### Iowa Census

According to the census there were 160,025 colonies of bees in Iowa in 1909 and only 138,319 colonies in 1919. The honey crop for the latter year was 2,840,025, or 21 pounds per colony.

### Maryland Beemen Meet

The second monthly meeting of the Maryland State Beekeepers' Association was held in the Hotel Rennert on the night of February 26, with an attendance of approximately 75. The Secretary-Treasurer, Prof. E. N. Cory, delivered a lecture on the relation of the structure of the bee to its several functions, particularly emphasizing honey, pollen collection and wax secretion. The next meeting, which will take place on the 18th of March at the Hotel Rennert, at 7:45 p. m., will be addressed by Dr. E. F. Phillips, on "'Spring Management."

### Tongue and Sting Lengths

"I know little, and care less, about the tongue-reach of my bees, but I care a lot about their sting-reach. . . One of them stung me on the turned-up tip of my poor nose, for, not expecting such activities, I had omitted to don even an old lace curtain. I didn't measure that bee's tongue-reach, nor even her sting-reach, but I calculate the latter an inch and a half! I don't want to buy queens guaranteed to produce workers with a 27-100 of an inch tongue-reach; I want to buy queens that will produce shorter stingers. That would be beginning at the right end, indeed!"—(R. Stanistreet, in Irish Bee Journal.)

Tara Gifu-ken, Japan, Feb. 26, 1921.

Dear Mr. Editor.

Reading January issue in which "the Seastream Plan" to build up weak colonies is stated, I like to write you about my opinion. If "they are tiered up in pairs, with a queen excluder between," or "three colonies are placed on top of one another, bees will gather into one cluster by and by, especially to the lowest hive from the top or tops. Of course, so doing most part of brood should be deserted very poorly, because decrease of guarding power. On your side of the "sea-stream" it must be truth; but on this side of the "sea-stream" it is rather questionable that plan will pay or not.

I remain, yours faithfully,

Yasuo Hiratsuka.

### Blue Melilot

Bonnier, in his "Flore Complete," describes a blue-flowered Melilot (**Melilotus cærulea Pers**), growing 6 to 24 inches in height, and sometimes cultivated, in Europe, as an ornamental plant. We have never seen it in this country. Can any of our foreign readers supply us with seed of this Melilot? We are willing to pay for it. He does not mention it as a honey producer, but it might yield some honey.

### The Henry County Honey Producers' Association

The beekeepers of Henry County, Illinois, believe in organization for mutual benefit. There are about 135 people in Henry County who maintain an apiary of one size or another. So far, 30 have joined the association and new members are being added from time to time.

On March 11 they met and arranged for a field meeting to be held in Galva, Ill., about the middle of June, date of which will be announced later. Hives will be opened at that time and evidences of disease or other apiary troubles will be discussed by

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Mr. C. P. Dadant and one of the State Bee Inspectors.

A resolution asking for added appropriation for bee inspection work was sent to the Senator and Representatives of the 37th Illinois district. Favorable responses have been received from these representatives, stating that they will support any such measure placed before the State Legislature.

O. W. Holmes, Secretary.

### Alabama in Line

Alabama now has a live beekeepers' association, with J. M. Cutts, of Montgomery, as President and M. C. Berry, of Haynesville, as Secretary.

## TWO SORTS OF HONEY

By H. L. McMurray

The Honey Man says, says he, "Thar be 2 sorts of honey, such as Honey No. 1, which the bees gather from the flowers. It is very sweet—it is good to eat. According to the doctors, it is very healthful and good for the complexion."

Eat honey and keep well.

Then he says, says he, "'Thar be Honey No. 2, which is different. It is extremely sweet—can't eat (only taste!) Usually begins to develop in the high school (if not sooner!) Grows sweeter and sweeter (sometimes!) Always plural (two or more!)".

He says, says he, "Thar be often one of them thar gol darn 'triangles.'"

Honey is sweet.

### Honey Its Own Antidote

At first Honey "No. 2" makes folks sick. But all you have to do is to follow the directions of the doctor(?) selling patent medicine on the street corner.

"Gentlemen," says he, "this is the most stupendous discovery! The most wonderful reviver! The most extraordinary of all remedies! If you're sick, take a bottle and it will make you well!" (No response).

"Gentlemen!" he shouted, with a look of intense pain spread on his face, "I am most profoundly interested in your physical health. I tell you this is the most colossal exaggeration ever offered to a suffering world. If you're not sick, take a bottle; it will make you sick and then cure you!!! (The buying was furious).

Honey makes you sweet.

### The Honey Germ

About the first indication of the presence of the "germ" (**Bacillus luna**) is a tendency on the part of the "afflicted" to "pair off" and wander in the "moonlight," especially along the river or the lake, or any old place.

The "symptoms" grow more pronounced and "aggravating" until "they" reach the last stage, when they appear to get "loony" and "go off" on a "honeymoon." (There's always a pair). The last stage is hopeless! The older people stand about and look on with profound pity!—disgust!! (and envy!!!)

### The Process

When "Honey No. 2' sours it produces a "scum" called "divorce," after which it sweetens up and goes through another "honeymoon" stage. Sometimes there are four or five such "stages!". This inclination to turn "sweet" and "'sour" is one of the unbelievable, inexplicable and "damnable" characteristics of the "germ."

Feed wifey honey—not "taffy."
Feed hubby honey—not "sass."

### Incurable and Universal

The doctors claim that there are no drugs to be given nor vaccine to be injected that will in any way check the ravages of this "deadly germ."

It thrives equally among the rich and the poor, the black and the white, the red and the yellow, the Eskimo and Hottentot. Among the very rich there seems to be an increased tendency to develop many "'points" to the "triangle."

"If you're not sick, take a bottle—it will make you sick and then cure you!!!"

"'Oh, it's a grand and glorious feeling."

You've had it!!! The dog-gone thing's "catchin'."

You couldn't help it, if you would, and you wouldn't if you could!

You know that's the truth!!!

Don't blame me!!!

Eat more honey.

The Diamond Match Co.
(APIARY DEPT.)
MANUFACTURERS OF
Beekeepers' Supplies
CHICO, CAL., U. S. A.

Dadant's incomparable Foundation is always kept in stock. Western Beekeepers can be supplied advantegeously.

BEEKEEPERS, wherever they may be located, before deciding where to obtain supplies, should write to The Diamond Match Co. for prices, and for their Beekeepers' Supply Catalogue.

This Company are the largest manufacturers in the world who make Bee Supplies. They own their own timber lands, mills and factories, and supply goods direct from the tree to the beekeeper.

Full advantage of this low cost of production is given to the purchaser.

The Apiary Department (which is in charge of experienced supply men, who are also practical beekeepers) maintains a constant excellence of product and offers unsurpassed service.

The Diamond Match Co.
Apiary Department CHICO, CAL., U. S. A

MR. BEEKEEPER—

We have a large plant especially equipped to manufacture the supplies that you use. We guarantee all materials and workmanship. We ship anywhere. We allow early order discounts and make prompt shipments. *Write for free illustrated catalog today*

LEAHY MFG. CO., 90 Sixth Street, Higginsville, Missouri
J. W. ROUSE, Mexico, Missouri A. M. HUNT, Goldthwaite, Texas

### Kentucky Bees

Bees have increased in Kentucky in the past ten years, there being now 156,889 colonies, as against 152,991 colonies in 1909. The honey crop for 1919 was 1,604,519 pounds.

## CLASSIFIED DEPARTMENT.

**Advertisements in this department will be inserted for 5 cents per word, with no discounts. No classified advertisements accepted for less than 36 cents. Count each initial or number as one word.**

**Copy for this department must reach us not later than the 20th of the month preceding date of issue. If intended for classified department it should be so stated when advertisement is sent.**

### SWEET CLOVER SEED

SWEET CLOVER—Biennial yellow; ideal for bee pasturage and soil improvement. New seed, recleaned and graded, unhulled 8c per pound. R. M. Hanna, Skillman, N. J.

ANNUAL WHITE SWEET CLOVER SEED—The new forage plant that will grow from 4 to.8 feet high and bloom and mature seed in 90 days. Our seed was grown at Ames, Iowa, and is first-class seed, hulled and scarified. We have only a small quantity to offer, put up in 1-ounce packages, at $1 each, postpaid.
Colorado Honey Producers, Denver, Colo.

### BEES AND QUEENS

QUEENS ON APPROVAL—Bees by package or colony. Tested queen, $2; select untested, $1.50; all other grades, $1. Bees without queen, 1 lb., $3; 2 lbs., $5; colony, $10.
Birdie M. Hartle,
924 Pleasant St., Reynoldsville, Pa.

QUEENS—Italian, 1 untested, $1.50; 6, $8. See my ad on page 201 of this issue.
Willard A. Friend, Bedford, Ohio.

FOR SALE—Three-banded; Italian queens untested, $1.50 each; 6. $7.50; 12, $14. Select untested, $1.75 each; satisfaction guaranteed. W. T. Perdue & Sons,
R. No. 1, Fort Deposit, Ala.

PRITCHARD QUEENS (Three-banded Italians)—My first season selling direct to the trade. June price: 1 untested, $1.75, 6 for $9.50; 1 select untested, $2, 6 for $11. After July 1: 1 untested, $1.50, 6 for $8; 1 select untested, $1.75, 6 for $9.50. Write for prices on larger quantities. I have a few extra select tested queens one year old at $5 each. Queens clipped free of charge on request. Acknowledgement and directions for introducing sent on receipt of order. Safe delivery and satisfaction guaranteed. Let me book your order now for early delivery, specifying the date of shipment desired. Otherwise orders will be filled in rotation.
Arlie Pritchard, Medina, Ohio.

JUST to let all my customers know I am still breeding 3-banded bees, Dr. Miller stock queens: 1 untested queen, $2, 6 for $11. Selects 25c each higher.
Curd Walker, Jellico, Tenn.

BOOKED to capacity on packages. Thanks. Queen orders considered later.
Jes Dalton, Bordelonville, La.

"NOT the best in color, or possibly not the gentlest, but mothers of colonies that bring in the honey," is what my customers tell me of my queens. My circular tells about them.
R. V. Stearns, Brady, Texas

QUEENS OF QUALITY—Our Hand-Moore strain of three-banded Italians are beautiful and good honey gatherers Bred strictly for business. Untested, $1.50; half doz., $8; select, $2. W. A. Latshaw, Clarion, Mich.

QUEENS—H. Brenner strain, 3-banded Italian. Equaled only by the best. Untested, $1.50 each, $15 per dozen
Dr. A. Wright, Kingsbury, Texas.

FOR SALE—Three-banded Italian queens, after May 25, untested, $1.50 each, 6, $8, 12, $15. Tested queens, $3 each. The above queens are all select. Robt. B. Spicer,
Wharton, N. J.

FOR SALE—Pure Italian queens, after May 30 $1 each; $10 per dozen.
A. R. Irish, Doctortown, Ga.

GOLDEN ITALIAN BEES—Bees on standard frame of honey with untested queen, 1-lb., $4.50; 2 lbs., $6.50. Sixteen years' experience in shipping combless package bees. Will supply them if specially desired.
Rosedale Apiaries, Big Bend, La.

MY famous three-banded Italian queens, $1.50 each, 6 for $8, after June 1.
J. W. Romberger, Apiarist,
3113 Locust St., St. Joseph, Mo.

QUEENS ON APPROVAL—Bees by package or colony. Tested queens, $2; select untested, $1.50. All other grades $1. Bees without queen, 1 pound, $3; 2 pounds, $5; colony, $10. A. M. Applegate,
840 Main St., Reynoldsville, Pa.

FOR SALE—Italian queens. In June, untested, 1, $1.50; 6, $8.25; 12, $16. Tested, $2.50 each. From July 1 to October 1, untested, 1, $1 25; 6, $7; 12, $13.50; tested $2. Mismated queens will be replaced if returned in 30 days. Dead queens will be replaced if returned by return mail.
R. B. Grout, Jamaica, Vt.

FOR SALE—Dark Italian queens, Brenner strain, H. Brenner, queen breeder, untested, $1.50; breeders, $3; 2-frame nuclei, $7.50. Add price of queen desired. For larger orders apply for prices. My guarantee. Every queen, dead or alive, returned at once in original cage, will be replaced, or money refunded. Can ship at once, any amount. Full instructions will accompany every order.
Mrs. J. T. FitzSimon, Castroville, Texas.

QUEENS from real producers, three-banded Italians: 1, $1.50; 6, $8.25; 12, $16.
Trinity Valley Honey Co.,
Route 8, Dallas, Texas.

200 ITALIAN NUCLEI—2-frame, $5; 3-frame, $7. Tested queen $2 extra. Prompt delivery. Half cash. Supplies at cost.
R. Kramske, 1104 Victor St., St. Louis, Mo.

SIMMONS QUEENS, bees and nuclei; goldens and three-band.
Fairmount Apiary, Livingston, N. Y.

EARLY QUEENS—Beginning to ship about May 20, 3-banded Italians; don't monkey with poor queens; get something worth while. One untested queen, $1.50; 6 for $8; select tested, 1 $3; 6 for $15. See prices for bees in the February and March numbers of the American Bee Journal.
J. W. Bittenbender, Knoxville, Iowa.

CARNIOLANS for season of 1921. Gentle, prolific; wonderful honey gatherers. Circular and prices free. Alfred Hann,
Box 81, Glen Gardner, N. J.

ITALIAN QUEENS—Three-banded, select untested, guaranteed. Queen and drone mothers are chosen from colonies noted for honey production, hardiness, prolificness, gentleness, and perfect markings. Price, May and June: $1.50 each, 12 or more $1.25 each. Send for circular.
J. H. Haughey & Co., Berrien Springs, Mich.

FOR SALE—Three-banded Italian queens ready June 1. Day old virgins, 55c each. Select untested, $1.50 each; 6, $8; 12, $15; 50, $60. Nuclei with queens, 2-frame $7.50; 3-frame $10.50. No disease; satisfaction guaranteed and correspondence answered promptly.
A. E. Crandall, Berlin, Conn.

MR. BEEKEEPER—If you enjoy preparing supers and removing honey, then you will be wise to head your colonies with my vigorous Italians. See larger add elsewhere.
Herman McConnell, Robinson, Ill.

FOR SALE—A limited number of leather colored Italian queens, the kind that gets the honey. L. C. Keet, in 1919, produced 40,000 pounds of honey from 200 colonies.
Geo. B. Howe, Sackets Harbor, N. Y.

FOR SALE—Nuclei and queens. See our display advertisement.
Cotton Belt Apiaries, Roxton, Texas.

FOR SALE—Unsurpassed Italian queens, ready June 1; untested, $1.50; 6, $7.50; 12, $14; 50, $55; 100, $105. Tested, 1, $2.50; 6, $13.50. My queens are actually laying before they are sent out.
J. D. Harrah, Freewater, Oregon.

FOR SALE—Hardy northern bred Italian queens and bees, each and every queen warranted satisfactory. For prices and further information write for circular.
H. G. Quirin, Bellevue, Ohio.

THAGARD'S ITALIAN QUEENS—My 3-banded are "bred for quality"; try them and be convinced. Circular free.
V, R. Thagard, Greenville, Ala.

GUARANTEED ITALIAN QUEENS AND BEES. Orders filled day received. See larger add elsewhere. Dr. White Bee Co.,
P. O. Box 71, Sandia, Texas.

HEAVY LAYING Italian queens that produce bustling 3-banded workers. Untested, $1.25; tested, $2. Safe delivery and satisfaction guaranteed. There is no disease in my apiaries. Order now and get them on time.
P. M. Williams, Ft. Deposit, Ala

FOR SALE—Pure Italian queens and nuclei. One untested queen, $1.50; 12, $15. Tested queens, $2.50 each. Nuclei, 2-frame nucleus, $5; 3-frame, $6.50. Add price of queen wanted to price of nucleus. Frank Bornhoffer,
Rt. 17, Mt. Washington, Ohio.

BEES AND QUEENS from my Carolina apiaries, progeny of my famous Porto Rican pedigreed breeding stock.
Elton Warner, Asheville, N. C.

FOR SALE—Golden or 3-banded virgins, 60c each, or $6 per dozen; safe arrival.
R. O. Cox, Rt. 4, Luverne, Ala.

DAY-OLD ITALIAN QUEENS—High quality, low price, satisfied customers. Safe arrival guaranteed in U. S. and Canada. Safe introduction Prices: 1, 75c; 12, $7.20; 100, $60. Write for circular early.
James McKee, Riverside, Calif.

FOR SALE—Black bees, 3 lbs. and queen for $6.25, parcel post prepaid. One-fourth down, balance just before shipping. Can ship beginning April 10.
Carl L. Wilson, Mount Vernon, Ga.

SWARTS' Golden queens produce golden bees of the highest quality. Untested $1.50 each, 6 for $8; tested, $3. Satisfaction guaranteed.
D. L. Swarts, Lancaster, Ohio, Rt. 2.

WE are now booking orders for early spring delivery of two and three-frame nuclei, with untested or tested queens. Write for prices and terms. We also manufacture cypress hives and frames.
Sarasota Bee Co., Sarasota, Fla.

EAGLE "MIKADO" PENCIL No. 174

174
EAGLE MIKADO
No2
EAGLE NEW

Regular Length, 7 inches

For Sale at your Dealer. Made in five grades

Conceded to be the Finest Pencil made for general use.

EAGLE PENCIL COMPANY, NEW YORK

HARDY ITALIAN QUEENS, $1 each.
W. G. Lauver, Middletown, Pa.

BEES—2-pound packages, with queens from our best breeders, 3-band strain; 1 package and queen $5.50; 25 or more, $5.25 each. One-fourth cash books your order. Safe arrival guaranteed. Promptness and efficiency our motto. Caney Valley Apiaries,
J. D. Yancey, Mgr., Bay City, Texas.

FOR SALE—Honey Brook Farm can supply you promptly, beginning April 10, with the very best three-banded Italian queens, one grade, select untested, $1.50 each, or $15 per dozen. Tested, $2 each, straight; ready April 1. Should you find some queenless colonies this spring, send me your order for a young queen to save them. I will not disappoint you. I have the bees and can deliver the goods. Pure mating, safe arrival, and satisfaction guaranteed.
Jasper Knight, Hayneville, Ala.

1921 PRICES on nuclei and queens: 1-frame nucleus, $3; 2-frame nucleus, $5; 3-frame nucleus, $6.60; without queens, f. o. b. Macon, Miss.; 5 per cent discount on lots of 25 or more. Untested queens $1.50 each, $15 per doz; tested queens $2 each, $22 per doz. No. disease; inspection certificate with each shipment. Safe arrival and satisfaction guaranteed in U. S.. Queens sold only with nuclei.
Geo. A. Hummer & Sons, Prairie Point, Miss

FOR SALE—Bees for strengthening purposes, 3-frame nuclei of hybrid or black bees on frames containing brood, at $5.25 f. o. b. Lyons, Ga. No queens included; none for sale. Will be able to start shipping April 20. No disease; safe arrival guaranteed if express agent notes loss on express tag. One-third cash with order. Book your orders at once, as number of nuclei for shipment will be limited.
Otto Diestel, Elza, Ga.

THE ITALIAN QUEENS OF WINDMERE are superior three-banded stock. Untested, $1.50 each, six for $8; tested, $2.50 each; select tested, $3. Bees by the pound; write for prices. Prof. W. A. Matheny,
Ohio University, Athens, Ohio.

FOR SALE—Golden Italian queens, untested, $1.50 each, dozen $14. Bees by the pound a specialty. Write for prices on bees.
E. A. Simmons, Greenville, Ala.

FOR SALE—Queens and bees, Italians and goldens, $1.60 each, $15 per dozen; 1 lb. bees, $5, 2 lbs. bees, $9. If queen is wanted with bees add the price of queen. Safe arrival and satisfaction guaranteed in United States or Canada. Cash or certified check must accompany all orders where parties are not known or satisfactorily rated.
Graydon Bros., Rt. 4, Greenville, Ala.

FOR SALE—Leather colored Italian queens, tested, until June 1, $2.50; after, $2. Untested, $1.25; 12, $13. Root's goods at Root's prices. A. W. Yates,
15 Chapman St., Hartford, Conn.

THREE-BANDED ITALIANS only, that have been bred to a high standard of excellence. I never bad any disease in my apiary. Safe arrival and satisfaction guaranteed. Untested queens: 1, $1.50; 12, $15. Tested queens: 1, $2.25; 12, $25.
Jul Buegeler, New Ulm, Texas.

FOR SALE—Root's strain of golden and leather-colored Italian queens; bees by the pound and nuclei. Untested queens, $1.60 each; select untested, $2 each; tested, $2.50 each; select tested, $3 each. For larger lots write. Circular free. A. J. Pinard,
440 N. 6th St., San Jose, Calif.

THREE-BAND BREEDERS from one of the heaviest honey-gathering strains in the State. $10 each. Delivery May 15.
A. V. Small, Augusta, Kans.

WE are booking orders for our golden Italian queens for spring delivery after April 15. Untested queens, 1, $1.50; doz., $15; select untested queens, 1, $1.75; doz., $18; virgin queens, 1, 76c; doz., $9; tested queens, 1, $3; doz., $36 Safe arrival guaranteed.
Tillery Brothers, Georgiana, Ala.

BOOK YOUR ORDERS for QUEENS now—Goldens, $2; tested, $3; banded, $1.50; tested, $2.50; six or more, 10 per cent less.
Clover Leaf Apiaries, Wahoo, Neb.

FOR SALE—Large, hardy, prolific queens: 3-banded Italians and golden; pure mating and safe arrival guaranteed. We ship only queens that are top notchers in size, prolificness and color. Untested, $2 each; 6, for $11; 25 for $45; tested queens $3 each, 6 for $16.
Buckeye Bee Co., Box 448 Massillon, Ohio.

EDSON APIARIES now booking orders for queen bees for delivery during season of 1921. Prices: One untested queen, $1.25; 50 untested queens, $57.50; 100 untested queens, $100. Orders filled in rotation; first shipments March 1, 1921.
Edson Apiaries, Gridley, Calif.

PURE ITALIAN QUEENS—Golden or leather colored, packages and nuclei; 1 untested queen, $1.60; 6, $7.50; 12, $13.50; 50, $65; 100, $100; virgins, 50c each; packages, 24 and under, $2.25 per pound; 25 and over, $2 per pound; nuclei, 1-frame, $4; 2-frame, $6; 3-frame, $7.60; queens extra. One-story 10-frame colony with queen, $12.
Golden Star Apiaries,
R. 3, Box 166, Chico, Calif.

BEES AND QUEENS from my New Jersey apiary J. H. M. Cook,
1Atf 84 Cortland St., New York City.

PACKAGE BEES AND PURE ITALIAN QUEENS—Booking orders now for spring delivery. Circular free. J. E. Wing,
155 Schiele Ave., San Jose, Calif.

HIGH GRADE ITALIAN QUEENS—Send for catalog.
Jay Smith, R. 3, Vincennes, Ind.

BEES BY THE POUND, ALSO QUEENS—Booking orders now. Free circular gives prices, etc. See larger ad elsewhere.
Nueces County Apiaries, Calallen, Texas,
E. B. Ault, Prop.

## HONEY AND BEESWAX

FOR SALE—Very fine quality basswood-milkweed (mostly milkweed) honey in 60-pound cans. P. W. Sowinski, Bellaire, Mich.

FOR SALE—Clover extracted honey, 15c per pound; amber and buckwheat, 12½c, two 60-pound cans to case; amber in 50-gallon barrels, 10c per pound.
H. G. Quirin, Bellevue, Ohio.

FOR SALE—Honey, very fine; supply your customers, always available.
E. F. Atwater, Meridian, Idaho.

HONEY—15c per pound. Walter Reppert,
Gen. Deliv., Shreveport, La.

FOR SALE—Choice clover extracted honey. State quantity wanted.
J. D. Beals, Oto, Iowa.

FOR SALE—Best quality clover-basswood extracted honey; two 60-lb. cans in case.
Gelser Bros., Dalton, N. Y.

FOR SALE—Extracted honey. Write for prices. A. L. Kildow, Putnam, Ill.

FOR SALE—Honey. Immediate shipment f. o. b. New York, in 60-lb tins: Calif. white orange, 19c lb.; Calif. white sage, 16c lb.; white sweet clover, 14c lb.; Calif. L. A. sage, 13c lb.; West Indian L. A., 10c lb.; West Indian L. A., 10-lb. tins, 6 per case, 15c lb.
Hoffman & Hauck, Woodhaven, N. Y.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendering. Fred W. Muth Co.,
204 Walnut St., Cincinnati, Ohio.

## SUPPLIES

FOR SALE—75 new 7-wire 10-frame queen excluders, 75c each, or 70c each for the lot.
O. W. Bedell, Earlville, N. Y.

FOR SALE—200 new 10-frame Root hive bodies, with frames; all in flat; were never uncrated, $340 takes the lot.
Herbert Kietzer, Vernon Center, Minn.

FOR SALE—Boiler Wax press and Bingham knife; new.
F. O'Donnell, Rock Creek, Minn.

TWENTY DOLLARS takes my twenty 10-frame painted supers.
O. Biermann, Malcolm. Iowa.

FOR SALE—12 new and used hives; no foulbrood. Otto Spiess, Oakwood, Wis

FOR SALE—Following, in flat: Hoffman frames, $7.50 per 100; unspaced, $7; 10-frame bodies, $1.20; reversible bottoms, 95c; telescope covers with inner cover, $1.75. All new, clean stock.
F. D. Bowers, Sugar Grove, Pa.

FOR SALE—200 absolutely new 10-frame hives complete, consisting of hive-bodies, tops, bottoms, tin rabbets, nails and Hoffman self-spacing frames knocked down, in lots of 5, $14; 200 full-depth supers with frames, $1.20 each; 500 lbs. of medium brood-foundation at 78c per pound
A. Irish, Doctortown, Ga.

WANTED—To quote special prices on queen cages in quantity lots, to breeders. State quantity.
A. G. Woodman Co., Grand Rapids, Mich.

SAVE MONEY on your sections, shipping cases, tin and glass honey containers, etc. Our free price list tells you how.
The Rattray-Hamilton Co., Almont, Mich.

FOR SALE—Good second-hand double-deck comb honey shipping cases for 4¼x4¼x1⅞ sections, 25 cents per case, f. o. b. Cincinnati; terms cash with order.
C. H. W Weber & Co.,
2146 Central Ave., Cincinnati, O.

FOR SALE—Good second-hand empty 60-lb. honey cans, two cans to the case, at 60c per case, f. o. b. Cincinnati. Terms cash with order. C. H W Weber & Co.,
2146 Central Ave., Cincinnati, O.

SEND us a list of goods wanted and will quote you lowest prices. We are the money-saving house. Price list free. Try us.
H. S. Duby & Son, St. Anne, Ill.

## WANTED

WANTED—Novice extractor, cheap and in good repair. Will sell, cheap, 24 sections T supers for 8-frame hives.
Delbert Lhommedieu, Colo, Iowa.

WANTED—Bees on shares; 100 to 200 colonies in Northern Michigan, for season of 1921. Years of experience on a large scale.
W. A. Latshaw, Clarion, Mich.

WANTED—Good second-hand extractor for Hoffman frames, 18¾ inches length.
Arthur E. Norton, Rowley, Iowa.

WANTED—Extractor, Cowan No. 15 preferred. Hamilton Bros., Marcus, Iowa.

WANTED — Second-hand two-frame Cowan reversible extractor. Send price.
Louis Hubert, Mexico, Mo.

WANTED—An extractor.
Ernest Manske, Ceresco, Neb.

WANTED—Bees in colonies, comb and extracted honey. Frank Coyle, Penfield, Ill.

WANTED—Apiary on shares or to buy, by two experienced beemen. Address,
L, care American Bee Journal.

WANTED—Beeswax, old combs and cappings for rendering on shares. Also wax accepted for trade. Top market prices offered.
A. I. Root Co., Council Bluffs, Iowa.

WANTED—Your order for "Superior" Foundation. Prompt shipments at right prices.
Superior Honey Co., Ogden, Utah.

## SITUATIONS

WANTED—Position in apiary; ten years' experience; no bad habits; willing worker.
G. O. Bosche, Rt. 4, Bx. 38, West Allis, Wis.

WANTED—Work with bees, by experienced man, age 47; cannot do much heavy lifting.
M. Knudsen, 3447 Le Moyne St., Chicago, Ill.

WANTED—One experienced man, and students or helpers, in our large bee business; good chance to learn. Modern equipment and outfit, including auto truck; located near summer resorts. Write, giving age, height, weight, experience, reference and wages wanted.
W. A. Latshaw Co., Clarion, Mich.

WANTED—Man with some experience to work with bees coming season. State age, experience and wages wanted, based on our furnishing board.
The Rocky Mountain Bee. Co.,
Box 1319, Billings. Mont.

WANTED—Two comb-honey men for season of 1921. Give experience, age, and wages expected.
B. F. Smith, Jr., Fromberg, Mont.

## FOR SALE

FOR SALE—Five hive bodies with ten Hoffman frames and supers, $17; used two seasons. S. Collyer, Black Mt., N. C.

FOR SALE—21 colonies of bees, 25 supers for comb honey, 50 extracting supers, extractor, 60 empty hives, 10-frame; will go for best offer. Inquire.
E. H. Kenyon, Blossvale, N. Y.

FOR SALE—50 standard hives with metal cover, inner cover and reversible bottom, at $3 each; 50 extracting supers, 6¾ in. deep, at 75c each; all 10-frame, nailed and painted; used two years; no frames or bees.
A. H. Hattendorf, Ocheyedan, Iowa.

FOR SALE—"Superior" Foundation (Weed process). Quality and service unexcelled.
Superior Honey Co., Ogden, Utah.

FOR SALE—Cedar or pine dovetailed hives; also full line of supplies, including Dadant's foundation. Write for catalog.
A. E. Burdick, Sunnyside, Wash.

## MISCELLANEOUS

WANT to hear from owner having farm for sale; description, price.
Care Lakenvelder Farms, Toccoa, Ga.

CAVIES (Guinea Pigs)—Needed by the thousands; profitable side line with bees. Write for particulars.
Maple Row Cavy Farm, Glenwood, Mich.

FOR SALE—Silver Spangled Hamburg Cockerels and eggs; rare old violin.
Elias Fox, Union Center, Wis.

BLACK SIBERIAN HARES—Enormous sizes, delicious meat and beautiful fur. Write for information and prices.
Siberian Fur Farm, Hamilton, Canada.

GRANULATED HONEY SLIPS—100, 20c.
Dr Bonney, Buck Grave, Iowa.

DR. MILLER'S BEE SONGS are in "Songs of Beedom.' Ten songs for 20 cents, postpaid; 2-cent stamps taken. Also Teddy Bear souvenir postal cards, 10 for 10 cents. Address Geo. W. York, Box 84, Spokane, Wash.

WANTED—Old bee magazines. We have several customers who wish to complete their files of American Bee Journal and other magazines relating to beekeeping. The early volumes are especially desired. State what you have and price wanted in first letter.
American Bee Journal, Hamilton, Ill.

## Italian Queens — raised from Italian Bees

Untested $2.25 each; Tested $4.00 each

**Chas. Boone Saunders, Merom, Ind.**

## QUINN'S QUEENS OF QUALITY

Have no superiors—"There's a reason." Are Mandelian bred, good qualities accentuated. Gray Carniolans, Gray Caucasians, most gentle of all, prolific, hardy, vigorous, disease-resisiting white comb builders—they deliver the goods.

ITALIANS, 3-banded, line-bred, pedigreed; need no boosting; they speak for themselves.

**CHAS. W. QUINN. Sabot, Va.**

## QUEENS

**Select Three-Banded Italians of the highest quality (one grade)**

Eight hundred honey-gathering colonies from which to select the very best breeders. No one has better bees than I. Can make prompt delivery by return mail. I have not yet disappointed a customer.

| PRICES | To July 1 | | After July 1 | |
|---|---|---|---|---|
| | 1 | 12 or more | 1 to 49 | 50 or more |
| Untested, each | $ 1.50 | $1.25 | $1.25 | $1.00 |
| Tested, each | 2.00 | | | |
| Breeders, each | 25.00 | | | |

A new customer from Missouri, where you have to show them, writes: "The dozen queens arrived promptly. They are the most beautiful I ever saw." (Name on request.) Another one, from the same state, writes: "Your 100 2-lb. packages averaged over 90 pounds surplus honey per colony; 10 pounds more per colony than the other 2-lb. packages purchased elsewhere." H. H. THALE, Durham, Mo.

Now listen to this, from Ontario, Canada: "Bees and queens purchased of you last season all wintered without a single loss. Save me 50 untested queens for May delivery." (Name on request.)

My customers say my queens stand the northern winters. They are bred up for this purpose, combined with the highest honey-gathering qualities and prolificness.

Pure mating, safe arrival, and satisfaction guaranteed. It is left with customer to say what is satisfaction.

**JASPER KNIGHT, Hayneville, Alabama**

## TIME IS MONEY

When the honey flow is on and you need supplies which will enable your bees to gather a maximum crop of honey. If you are rushed and in a particular hurry, try ordering from Council Bluffs. For we are well stocked with the supplies you need. Can ship over any one of nine trunk lines to your very back door, and are prepared to give your order immediate and individual attention.

If you want action, try us. That is, if you use quality goods That's the only kind we can send you. May is here. June, July and August are left to you. Let us help you in making these months count.

**THE A. I. ROOT CO. OF IOWA, COUNCIL BLUFFS, IA.**
The "Railroads Everywhere," Town

## BEEKEEPERS

WE MANUFACTURE DOVETAILED HIVES, HOFFMAN FRAMES, SECTIONS AND SHIPPING CASES

Our hives are made of best grade White Pine, cut accurate and smooth to standard measure, sections are made of Basswood polished on both sides. There are no better made.

We carry a complete line of everything used in the apiary. Our shipping facilities are as good as can be found anywhere. We want your business. We guarantee prompt and satisfactory service. Price list free.

**MARSHFIELD MANUFACTURING COMPANY, Marshfield, Wis.**

## THREE BAND AND GOLDEN QUEENS

that produce hustling bees. Bred to fill the supers. Our breeding stock produced 400 pounds surplus honey in 1920. Our breeding yards are several miles apart. We breed from the very best non-swarming, gentle, long-lived, prolific strains of bees and drones that thirty years' constant work can produce and money can buy. No disease. Satisfaction guaranteed.

| | | |
|---|---|---|
| 1 Untested | $1.75; | 12, $1.50 each |
| 1 Tested | $3.00; | 12, $2.75 each |

**DR. WHITE BEE CO., Sandia, Texas**

## QUIGLEY'S QUEENS AND BEES

Three-banded Italians, are bred from ideal colonies by double grafting, producing queens of superior quality; 20 years building this strain from the best honey-producing colonies. No disease; 35 years in this location. June delivery. Booking orders now.

Tested, $3; untested, $2. 6 $11, 12 $20; breeders $10, shipped on brood. Three-frame nuclei, untested queen, $9; tested, $10. Ten-frame colony, tested queen, $20. Two-pound package, untested queen, $8; tested, $9.

Purity and satisfaction guaranteed. Send for circular.

**E. F. QUIGLEY & SON,**
**Unionville, Mo.**

## A NEW BEE BOOK

**"Dadant's System of Beekeeping"**
Price $1.00.

# FOR SALE

## IF YOU WANT THE CHEAPEST, BUY THE BEST

I am prepared to furnish for the season of 1921 twenty-five hundred two and three frame nuclei of my bright 3-banded Italian bees, headed with young, vigorous queens. These bees are free from disease, and safe arrival guaranteed. Hoffman frames wired and on full sheets of foundation; very few combs over two years old. I am booking orders now. One-fourth or one-half cash with order, balance before shipping.

Two-frame, $4.25; three-frame, $5.25. If queens are wanted, add $1.25 each.

After May 5th I will be ready to mail queens at the following prices: Untested, single $1.50, six for $8, twelve for $15. Tested, $2.50 each. Select tested, $3.50 each. Write for prices for large lots.

**A. B. MARCHANT, Jesup, Ga.**

Reference: Merchants and Farmers Bank of Jesup.

# TENNESSEE-BRED QUEENS

Forty-nine Years' Experience in Queen-Rearing
Breed Three-Band Italians Only

| | Nov. 1st to July 1st | | | July 1st to Nov. 1st | | |
|---|---|---|---|---|---|---|
| | 1 | 6 | 12 | 1 | 6 | 12 |
| Untested Queens | $2.50 | $12.00 | $22.00 | $2.00 | $10.00 | $18.00 |
| Select Untested | 2.75 | 13.50 | 24.00 | 2.25 | 12.00 | 20.00 |
| Tested | 3.50 | 20.00 | 35.00 | 3.00 | 16.00 | 30.00 |
| Select Tested | 4.00 | 22.50 | 40.00 | 3.50 | 18.50 | 35.00 |

Select tested, for breeding $7.50

The very best queen tested for breeding $15

Capacity of yard 6000. I sell no bees by the pound or nuclei except with high priced tested and breeding queens

Queens for export will be carefully packed in long distance cages, but safe delivery is not guaranteed

**JOHN M. DAVIS, Spring Hill, Tenn.**

Five colonies of your stock produced 2660 finished sections—the best one 616 finished sections
JOHN M. BIXLER, Corning, Iowa, February 1, 1921

## FOREHANDS' QUEENS. They Satisfy, Why?

Because of 28 years of experimental work with both queen breeding and honey production.

With breeding and selecting of imported queens, I have reached a standard which is ideal. Queens as good, but none BETTER. Why experiment? Take advantage of the life experience of my breeders.

OUR SERVICE STATION

We are ready to serve you at all times, whether you desire queens or advice. Let us help you with your bee problems. All questions are cheerfully answered.

I breed three-band Italians only.

| November 1 to June 1. | 1 | 6 | 12 |
|---|---|---|---|
| Untested | $2.00 | $ 9.00 | $16.00 |
| Select Untested | 2.25 | 10.50 | 18.00 |
| Tested | 3.00 | 16.50 | 30.00 |
| Select Tested | 3.50 | 19.50 | 36.00 |

Orders booked now for spring delivery. One-fourth the full amount with order and balance when shipment is desired. Pure mating, safe arrival and satisfaction guaranteed. Write for circular and large order discounts. Shipment to foreign countries at receiver's risk.

Bees in 2-pound packages, 1, $6; 25 or over, $5.80; 50 or over, $5.40; 100 or over, $5. Without queens.

Will begin shipping bees as early as weather will permit.

**N. FOREHAND, Ramer, Alabama**

**Established 1885**

Beekeepers should send for our new catalog, free. Beehives made of white pine. Root Co.'s old standby make of supplies. Order early. Beeswax in exchange for supplies or cash.

**J. Nebel & Son Supply Co.,**
High Hill, Mo.

## ITALIAN QUEENS

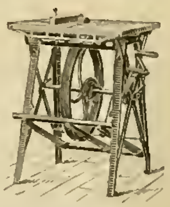
at before the war prices

**O. E. TIMM, BENNINGTON, NEB.**

## BARNES' FOOTPOWER MACHINERY

Read what J. E. Parent, of Chariton, N. Y. says: "We cut with one of your Combined Machines last winter 50 chaff hives with 7-in. cap, 100 honey-racks, 500 frames and a great deal of other work."

**W. F. & JOHN BARNES**
**995 Ruby St., ROCKFORD, ILLINOIS**



## ELECTRIC IMBEDDER

**Price without Batteries $1.50**
Not postpaid.

**Actually cements wires in the foundation. Will work with dry cells or with city current in connection with transformer. Best device of its kind on the market.**

**For sale by all bee supply dealers**

**Dadant & Sons, Manufacturers HAMILTON, ILL.**

# STUTT'S

Italian queens are supreme queens, ready June 1. Untested, $1.25; 6, $6.50; 12, $12.50. Select untested, $1 50; 6, $8.00; 12, $15.00.

Pure mating and safe arrival guaranteed

**Alfred A. Stutt, Lincoln, Ill.**

**SHE-SUITS-ME queen-bees, prices for 1921: Untested Italians, $2 each; $1.75 each for 10 or more, prior to June 15. After June 15, 1 to 9 queens $1.50 each, 10 to 24 $1.40 each, 25 and up $1.25 each.**

**ALLEN LATHAM,**
**Norwichtown, Conn.**

## GOLDEN QUEENS 1921

Untested, $1.50 each, or 6 for $8. For 100 lots write for prices. I will begin shipping about April 20, and I guarantee safe arrival and reasonable satisfaction to everybody.

**R. O. COX, Rt. No. 4, Luverne, Ala.**

## BEE SUPPLIES

We carry a complete stock of supplies at all times, and can make prompt shipments. Our prices will interest you.

**Send Us Your Inquiries**

**A. H. RUSCH & SON CO.**
**Reedsville, Wis.**

# FOREHAND'S THREE BANDS

## THE THRIFTY KIND

are bred from the best stock that can be gotten from Italy and from our own apiaries. We are constantly breeding and selecting to improve the thriftiness, hardiness, gentleness and beauty of our bees. Twenty-nine years of select breeding have brought our strain of bees up to a standard **surpassed by none but superior to all.**

We guarantee pure mating, safe arrival and satisfaction in the U. S. and Canada.

*Write for circular giving full information about our bees and queens*

**PRICES UP TO JUNE 30**

| | 1 | 6 | 12 | 100 or over ea. |
|---|---|---|---|---|
| Untested | $2.00 | $10.00 | $18.00 | $1 40 |
| Select Untested | 2.25 | 11.50 | 21.00 | 1.65 |
| Tested | 3.00 | 16.00 | 30.00 | ---- |
| Select Tested | 4.50 | 25.00 | 45.00 | ---- |

One pound package: 1, $3.75; 25 or over, $3.50; 50 or over, $3.25; 100 or over, $3 00.

Two pound package: 1, $6 00; 25 or over, $5.80; 50 or over, $5 40; 100 or over $5.00.

Prices are quoted per each package. Add the price of the queen wanted. No three pound packages for sale. Safe arrival is not guaranteed on queenless packages.

**W. J. FOREHAND & SONS, Fort Deposit, Ala.**

# Quality Bee Supplies

FROM A

# Reliable House

Without fear or favor, I place my BEE SUPPLIES and SERVICE before you.

It is the small annoyances that often grow into disastrous results. Avoid the so-called "little losses" by using MONDENG'S GOODS.

Quality is first—save time when you put your goods together, by getting supplies that are accurately made. Service is next—no delays when bee supplies are ordered from my factory.

I am ready to meet your urgent needs.

Send for my new price list.

Closing out all Langstroth and Wisconsin hives and supers. Also Langstroth triangular top-bar frames and eight-frame D. T. supers for 4x5 sections. Will sell at cost price. Write for quotations.

**CHAS. MONDENG**

**146 Newton Ave. N. and 159 Cedar Lake Rd. Minneapolis, Minn.**

# QUEENS

May Queens for the early Honey.
Order Now.
GENTLE THREE BAND ITALIANS
Untested $1.25, select untested $1.50

**D. W. HOWELL, Shellman, Ga.**

# HONEY, ROOTS, FURS

Why not increase your profits? A 32-page booklet describing books on Bee Hunting, Medicinal Root Growing, Fur Farming, Tanning, etc., free.

**A. R. HARDING, 75 N. Ohio Ave., Columbus, O.**

# Italian Queens of Quality

Prices for 1921:

| | 1 | 6 | 12 |
|---|---|---|---|
| Virgins | $1.00 | $5.00 | $ 9.00 |
| Untested | 1.50 | 8.00 | 15.00 |
| Tested | 2.00 | 11.00 | |

One-third down books order, balance one week before delivery.

Why not give my queens a trial? They are reared from mothers whose colonies are gentle, hardy and good honey gatherers. I rear all of my queens, personally, and strive for quality, not quantity. Safe arrival guaranteed in the United States and Canada.

**WILLARD A. FRIEND**

**Box 112, Bedford, Ohio**

# QUEENS

I. F. Miller's strain Italian queen bees. Northern bred for business; from my best *Superior Breeders* (11 frames brood on April 7). Gentle, roll honey in, hardy, winter well, not inclined to swarm, 3-banded; 27 years' breeding experience. Satisfaction guaranteed. Safe arrival in U. S. and Canada. Untested, $1.50; 6, $8; 12, $14. Select, $1.75; 6, $9; 12, $17. 1 lb. bees, $3.50; 2lbs., $5.50; 3 lbs., $7.50 (No queen).

**I. F. MILLER, Brookville, Pa., R 2**

QUALITY SERVICE

*Why haven't you clipped this coupon?*

ARE THE DEMANDS OF THE DAY

*We Guarantee our Quality*

And in accepting any order from you, obligate ourselves to serve you, in making your beekeeping more interesting and profitable to you.

Use us.

The coupon will get our immediate attention, if we can be of any service to you regarding the matters suggested.

THE A. I. ROOT CO OF IOWA, Council Bluffs, Ia.
Gentlemen:

It looks as if 1921 were going to be a fine Beekeepers' year. For that reason I am preparing for an interesting and profitable season. To that end, I am particularly interested in the following.

☐ Plans for Spring Activity
☐ Spring Feeding
☐ Books that make Beekeeping more Interesting and Profitable
☐ A sample copy of "Gleanings in Bee Culture," the Beekeepers Magazine
☐ The New Process Foundation, Airco
☐ Your last catalog. I have _____colonies in _____ frame hives
For your further information I wish to state that

______________________________

______________________________

THE A. I. ROOT CO. OF IOWA
COUNCIL BLUFFS, IOWA

**Statement of the Ownership, Management, Circulation, Etc., required by the act of Congress of August 24, 1912, of American Bee Journal, published monthly at Hamilton Illinois, for May, 1921:**

STATE OF ILLINOIS, }
COUNTY OF HANCOCK. } ss.

Before me, a Notary Public, in and for the State and County aforesaid, personally appeared M. G. Dadant, who having been duly sworn according to law, deposes and says that he is the Business Manager of the American Bee Journal, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in Section 443, Postal Laws and Regulations, printed on the reverse side of this form, to-wit:

1. That the names and addresses of the publisher, editor, managing editor and business manager are:

Publisher, American Bee Journal, Hamilton, Ill.
Editor, C. P. Dadant, Hamilton, Ill.
Managing Editor, Frank C. Pellett, Hamilton, Ill.
Business Manager, M. G. Dadant, Hamilton, Ill.

2. That the owners are:

C. P. Dadant, Hamilton, Ill.
H. C. Dadant, Hamilton, Ill.
V. M. Dadant, Hamilton, Ill
Leon Saugier, Hamilton, Ill.
L. C. Dadant, Hamilton, Ill
M. G. Dadant, Hamilton, Ill.
Jos. Saugier, Hamilton, Ill.

That the known bondholders, mortgagees and other security holders owning or holding 1 per cent or more of the total amount of bonds, mortgages or other securities, are: None.

(Signed) M. G. DADANT.

Sworn to and subscribed before me this 11th day of April, 1921.

MARY McCOY, Notary Public.
My commission expires January 17, 1924.

---

Books on Beekeeping

First Lessons in Beekeeping, by C. P. Dadant. 167 pages, 178 illustrations. Cloth $1.

Dadant System of Beekeeping, by C. P. Dadant. 118 pages, 58 illustrations. Cloth $1.

The Honeybee, by Langstroth and Dadant. 575 pages, 229 illustrations. Cloth $2.50.

Outapiaries, by M. G. Dadant. 125 pages, 50 illustrations. Cloth $1.

1000 Answers to Beekeeping Questions, by C. C. Miller. 276 pages, illustrated. Cloth $1.25.

American Honey Plants, by Frank C. Pellett. 300 large pages, 155 illustrations. Cloth $2.50.

Practical Queen Rearing, by Frank C. Pellett. 105 pages, 40 illustrations. $1.00.

Productive Beekeeping, by Frank C. Pellett. 326 pages, 134 illustrations. Cloth $2.50.

Beginner's Bee Book, by Frank C. Pellett. 179 pages, illustrated. Cloth $1.25.

Beekeeping in the South, by Kennith Hawkins. 120 pages, 58 illustrations. Cloth $1.25.

AMERICAN BEE JOURNAL
HAMILTON, ILL.

## FOR SALE

We make a specialty of shipping 2-frame nuclei. Combs are drawn from full sheets of foundation wired in Hoffman frames. Combs will be well covered with bees, and filled mostly with sealed brood and sufficient stores to do them while on their journey. Health certificate with every shipment. Safe arrival guaranteed. No more orders taken than can be filled promptly. Price of each two-frame nucleus, without queen, $5.00. Prices of queens are as follows: Untested: 1, $1.50; 6, $8.00; 12,, $15.00; 50, $60; 100, $100. Tested queens each, $2.50. When queen is wanted, add price of queen to that of nucleus. We begin shipping nuclei with untested queens May 1, but can ship nuclei with tested queens and without queens as early as April 15. Book your order now by sending in one-fourth of the amount of order. The balance you may send just before shipping date. Three-banded Italians only, and as good as can be purchased.

**COTTON BELT APIARIES**
**ROXTON, TEXAS**

## COLONIES OF ITALIAN BEES

In practically new 10-frame hives at $15 each. No disease. These colonies will consist of at least five frames of brood, plenty of bees with young Italian queens. All combs are wired, straight and built from full sheets of foundation

**Satisfaction Guaranteed**

**VAN WYNGARDEN BROS.**
**R. F. D. No. 4 HEBRON, IND.**

"Not the best in color, or possibly not the gentlest, but mothers of colonies that bring in the honey," is what my customers tell me of my queens. My circular tells about them

**R. V. STEARNS, Brady, Tex.**

## QUALITY QUEENS AT QUANTITY PRICES

**Breed Three-Band Italians only**

PRICES FOR 1921

| | Nov. 1 to June 30. | | | July 1 to Nov. 1. | | |
|---|---|---|---|---|---|---|
| | 1 | 6 | 12 | 1 | 6 | 12 |
| Untested | $2.00 | $ 9.75 | $18.00 | $1.50 | $8.00 | $15.00 |
| Select Untested | 2.25 | 11.25 | 19.80 | 1.75 | 9.75 | 16.80 |
| Select Tested | 3.50 each | | | 3.00 each | | |

Breeding queens after June 15, with 2-frame nuclei, $15.00 each.

Queens are reared from mothers whose colonies are GENTLE, HARDY, and as HONEY GATHERERS will compare with any. Each and every queen reared by the latest and most approved methods, thus insuring queens that are capable of duplicating the excellent characteristics of their mothers.

I rear all my queens personally, and strive for QUALITY instead of quantity. You may rest assured that when you order queens of us you are getting among the best that can be produced. You take absolutely no risk in getting our queens for SATISFACTION and safe arrival guaranteed in the United States and Canada. Foreign shipments at receiver's risk. I sell no bees by the pound, nor nuclei, only with breeding queens. Try and estimate your needs for the approaching season and place your order early.

**HERMAN McCONNELL, Robinson, Illinois**

## HONEY CANS

Let us figure with you on your requirements of Honey Cans. We ship any quantity desired.

**WRITE FOR PRICE LIST**

**ADDRESS**

**THE UNITED STATES CAN CO., Cincinnati, Ohio**
**VIRGINIA CAN COMPANY, Roanoke, Va.**
**BOX 577-D**

## QUEENS, Select Three-Banded

Write for descriptive circular of our Select Italian Queens. Pure mating, safe arrival and satisfaction guaranteed

| | May 1 to June 15 | | | June 15 to Nov. 1 | | |
|---|---|---|---|---|---|---|
| | 1 | 6 | 12 | 1 | 5 | 12 |
| Untested | $2.00 | $10.00 | $18.00 | $1.50 | $ 9.00 | $15.00 |
| Select Untested | 2.50 | 12.00 | 20.00 | 2.00 | 10.00 | 18.00 |
| Tested | 3.50 | 19.50 | 36.00 | 3.00 | 16.00 | 30.00 |
| Select Tested | 4.00 | 22.50 | 40.00 | 3.50 | 19.50 | 36.00 |

**HARDIN S. FOSTER, Columbia, Tenn.**

## GOLDEN ITALIAN QUEENS

| | May 1 to July 1. | | | July 1 to Nov. 1. | | |
|---|---|---|---|---|---|---|
| | 1 | 6 | 12 | 1 | 6 | 12 |
| Untested | $2.50 | $12.00 | $22.00 | $2.00 | 10.00 | $18.00 |
| Select Untested | 2.75 | 13.50 | 24.00 | 2.25 | 12.00 | 20.00 |
| Tested | 4.00 | 22.50 | 40.00 | 3.50 | 10.50 | 36.00 |
| Select Tested | 4.60 | 25.00 | 45.00 | 4.00 | 22.50 | 40.00 |

**BREEDERS $12.50 TO $25.00**

10 per cent additional for Exported Queens. Queens for Export will he carefully packed in long distance cages, hut safe delivery is not guaranteed.

NO NUCLEI, FULL COLONIES OR POUND PACKAGES.

**BEN G. DAVIS, Spring Hill, Tenn.**

**SOUTHLAND APIARIES**

W. S. TATUM, Prop.

BY INDUSTRY WE THRIVE

Box 585. HATTIESBURG, MISS.

DISTRIBUTORS OF

**ROOT QUALITY BEE SUPPLIES**

**AIRCO FOUNDATION**

**We sell Root, Hoffman frames, full depth, $9.00. 15% off on all hives and supers, 10% off on all other supplies. Discount on quantity orders**

PURE ITALIAN QUEENS

| | | | |
|---|---|---|---|
| Untested - - - | $1.50 ea. | 12 or more - - | $1.25 ea. |
| Tested - - - | 2.50 ea. | 12 or more - - | 2.25 ea. |
| Select Tested - - | 3.00 ea. | 12 or more - - | 2.75 ea. |

BEES IN POUND PACKAGES

Shipped on Comb of Foundation

| | | | |
|---|---|---|---|
| 1-pound package bees, no queen, | $3.00 | 25 or more, | $2.75 |
| 2-pound package bees, no queen, | 5.00 | 25 or more, | 4.75 |
| 3-pound package bees, no queen, | 7.00 | 25 or more, | 6.50 |

TWO AND THREE-FRAME NUCLEI

| | |
|---|---|
| Two-frame nucleus, no queen - - - - - | $4.50 |
| Three-frame nucleus, no queen - - - - - | 6.00 |

SPECIAL

| | |
|---|---|
| One-frame brood and pound bees, no queen - - | $4.00 |
| Two-frame nucleus, with young tested queen - - | 6.50 |

Bees will build up faster with frame of young brood in the hive.

FULL COLONIES

Good strong colonies on good combs, well filled with brood and in new painted hives.

| | |
|---|---|
| Colony in new 8-frame hive, no queen - - - | $18.00 |
| Colony in new 10-frame hive, no queen - - - | 20.00 |

Select your queen from above and add her price.

# Crop and Market Report

Compiled by M. G. Dadant

### CONDITION OF BEES

Bees came through the winter with very little loss, but the warm weather resulted in a maximum use of stores, with a result that many colonies are now running very short of food. In fact, we believe that the losses from starvation this spring have more than equalled the loss during the winter. Such bees as have plenty of stores are more populous than usual at this time of year, and if kept provided until crop time, should be in the best of condition to take advantage of the flow.

### HONEY FLORA

California reports copious rains, and the outlook for the early flows was never better. Lack of moisture led to pessimism in the clover regions, but plentiful rains lately have tended to counterbalance the lack of earlier snows. In many localities the prospects are now very favorable for an average flow from the clovers. Conditions seem to be as last year, spots with much clover, and spots with little.

The late freezes have damaged to a large extent all the early blooming trees, such as the fruit trees. However, very little surplus nectar is produced from these. But it will mean more liberal feeding to offset the short and light flows from these sources. In Texas the damage has been considerable, and prospects are not as flattering as earlier. In the balance of the South conditions seem good.

### HONEY AND PRICES

Prices of honey still remain low. In fact it seems as if they might have reached their low point, except for the fact that there are still producers anxious to sell, while buyers are scarce. Foreign honey prices are about at a minimum. They have reached a point where they can profitably seek European markets to better advantage. This is reflected in the export and import statement for January, just issued. Thirty-six thousand pounds of honey were imported, while 207,000 pounds were exported.

The New York market is still flooded with foreign honey, but the interior markets are gradually cleaning up. Some dark foreign honeys have sold as low as 5c per pound, while domestic amber has sold for 6c in car lots, with white at from 7 to 10c in car lots.

Comb honey is practically off the market, with a slow but steady call for it on the part of the consumer. Evidently many will return to the production of comb, hoping for a better demand than for extracted.

With hopes of a larger duty on honey this summer, and a gradual demand on the part of Europe, it is very possible that conditions will improve materially in the honey markets of this country. The optimistic are hoping for a stabilization in the fall at 10 to 12 cents for white honey in car lots.

Sugar conditions are not reassuring. Europe is rapidly regaining normal production, and sugar stocks in those countries are much higher than at any time since the war.

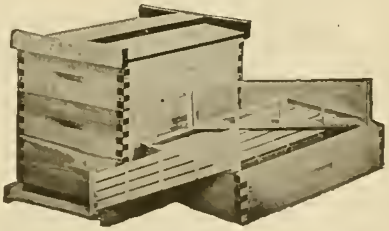
The last news is that much fruit is killed. This will increase the demand for honey.

**THE BEES AS BUYERS**

IF bees could choose the wares required to do their work best, chances are they'd select **"falcon"** supplies to keep them contented and help them produce more honey.

Because **"falcon"** stands for 40 years satisfaction among successful beekeepers and their colonies.

Our guarantee of safe arrival follows every article shipped from our factory.



*Order the best—Write for our red catalog*

DISTRIBUTOR FOR THE CENTRAL WEST

**WILLIAM H. RODMAN, 2027 Main Street, Gateway Station, Kansas City, Mo.**

**FALCONER MFG. CONCERN, Falconer, (near Jamestown) N. Y., U. S. A.**

*"Where the best Beehives come from"*

**BEE SUPPLIES**

THE VERY BEST QUALITY AND SERVICE

We have a large stock of Hives, Bodies, Supers, Foundation and other supplies ready for immediate shipment.

Give us an opportunity to quote you our prices. We are certain you will find them attractive.

If you want the Very Best Quality at the Lowest Price, send us your orders at once. All correspondence will have our immediate attention.

**AUGUST LOTZ COMPANY, Boyd, Wisconsin**

**Pure Italian Queens of the Best Known Strain.—A. I. Root and H. D. Murry 3-Banded Only.**

Booking orders now for immediate delivery of 2-frame nuclei, 2-lb. packages and full colonies.

Prices: Untested, 1, $1.50; 12, $14.50. Tested, 1, $2.25; 12, $24. Select tested, 1, $3; 12, $30. Two-frame nuclei, with untested queen, $6; 25 or more, $5.50:. Two-frame nuclei, with tested queen, $6.75; 25 or more, $6.25. Two-lb. package hybrid bees, each $4. Add price of queen wanted. No disease near here. Health certificate with all I have for sale. Safe arrival and satisfaction guaranteed.

P. S. Terms, one-fourth with order, balance due at shipping time.

**BAUGHN STONE, Manchester, Tex.,**
**Formerly Murry & Stone.**

A SUPERIOR QUALITY
AT LESS COST

# SUPPLIES

A SUPERIOR QUALITY
AT LESS COST

Prices of Honey as well as most commodities have come down. There is no reason why prices of Hives and Supplies should be as high as the prices which are being charged by most supply manufacturers.

Our prices as will be noticed by comparing prices on items listed below are so reasonably low that competitors claim superiority on the mere strength of their higher prices.

When you order Diamond Match Co.'s Supplies you get the best that is obtainable at any prices.

On orders amounting to $50.00 or over deduct 5 per cent.

**Hives, Supers. etc., listed below are in the flat and are complete with Hoffman frames, nails, metal rabbets and all inside fixtures**

**ONE STORY DOVETAILED HIVES**

| | | | |
|---|---|---|---|
| Five 8 Frame | - | - | $16.00 |
| Five 10 Frame | - | - | 16.00 |

**SHALLOW EXTRACTING SUPERS**

| | | | |
|---|---|---|---|
| Five 8 Frame | - | - | $6.00 |
| Five 10 Frame | - | - | 6.50 |

**STANDARD HOFFMAN FRAMES**

| | | | |
|---|---|---|---|
| 100 | $8.50 | 500 | $40.00 |

**FULL DEPTH SUPERS**

| | | | |
|---|---|---|---|
| Five 8 Frame | - | - | $8.00 |
| Five 10 Frame | - | - | 9.00 |

**NO. 1 STYLE COMB HONEY SUPERS**

| | | | |
|---|---|---|---|
| Five 8 Frame | - | - | $5.75 |
| Five 10 Frame | - | - | 6.25 |

**SHALLOW EXTRACTING FRAMES**

| | | | |
|---|---|---|---|
| 100 | $6.70 | 500 | $32.50 |

**OUR INCOMPARABLE QUALITY FOUNDATION**

| | | | |
|---|---|---|---|
| Medium Brood | 5 lbs., 82c per lb. | 25 lbs., 81c | 50 lbs., 80c |
| Thin Surplus | 5 lbs., 90c per lb. | 25 lbs., 89c | 50 lbs., 88c |

Especially prepared beehive white paint ½ gallon cans $2.10

**HOFFMAN & HAUCK, Inc., Woodhaven, N. Y.**

## QUEENS AND BEES

We are now booking orders for spring delivery.

**NUCLEI ON ALUMINUM COMBS**

| | |
|---|---|
| 2-Frame nucleus without queen | $6.00 |
| 3-Frame nucleus without queen | 7.50 |

**PACKAGE BEES**

| | | |
|---|---|---|
| 1 lb. Package | 1 package, $3.00; | 12 packages, $2.85 |
| 2 lb. Package | 1 package, $5.00; | 12 packages, $4.75 |
| 3 lb. Package | 1 package, $7.00; | 12 packages, $6.60 |

Add price of queen desired.

| QUEENS | 1 | 12 | 50 |
|---|---|---|---|
| Untested 3-band Italian | $1.50 | $15.00 | $55.00 |
| Tested 3-band Italian | 2.50 | 27.50 | 112.50 |
| Select tested 3-band Italian | 3.50 | 37.50 | 150.00 |

We guarantee safe arrival.

**PATTERSON & WINTERS, Jourdanton, Texas**

**DOWN IN COST**

## TINS AND GLASS JARS

**ORDER NOW FOR NEXT CROP PACKING**

**2 1-2-POUND CANS**

| | |
|---|---|
| 2 dozen reshipping cases | $ 1.45 per case net |
| In 100-can crates | 6.50 per crate net |

**5-POUND PAILS WITH HANDLES**

| | |
|---|---|
| 1 dozen reshipping cases | $ 1.35 per case net |
| In crates of 100 | 8.30 per crate net |

**10-POUND PAILS WITH HANDLES**

| | |
|---|---|
| In one-half dozen cases | $ 1.10 per case net |
| In crates of 100 | 12.75 per crate net |
| 5-gallon tins, used, good condition, 2 to case | $0.50 per case |
| 5-gallon tins, new, 2 tins to wood case | 1.30 per case |

**White Flint Glass, with gold lacqd. wax-lined caps**

| | |
|---|---|
| 8-oz. honey capacity cylinder style | $1.50 carton of 3 doz. |
| 16-oz. honey capacity, table jar style | 1.40 carton of 2 doz. |
| Quart or 3-pound honey capacity, Mason style | 1.00 carton of 1 doz. |

**NOTE: LOW PRICES SUBJECT TO CHANGE AT ANY DATE**

**HOFFMAN & HAUCK, Inc., Woodhaven, N. Y.**

## QUEENS THAT PLEASE

Our Reliable Three-banded Italian Queens are ready by return mail, promptly. We have 1,500 nuclei in full operation and can take care of orders by return mail. All orders filled promptly or money refunded.

**WHY ORDER FARMER QUEENS?**

They are bred by as skillful and experienced queen breeders as can be found in the United States. There are very few places where queens are reared under as favorable conditions as in our queen-rearing yards. We devote our time to rearing as good queens as possibly can be, and guarantee that no better can be reared. We spare neither labor nor money in developing our queens. Our original stock was procured from the highest quality obtainable, which we have improved to the highest point. Every queen must give satisfaction or the deal is not closed.

You take no risk in buying our queens. Safe arrival and satisfaction in U. S. A. and Canada. Satisfaction is left entirely to purchaser. Prompt service given to all orders. Every queen guaranteed to be purely mated.

| Prices: | 1 | 6 | 12 | 100 |
|---|---|---|---|---|
| Untested | $1.50 | $ 8.00 | $15.00 | $100.00 |
| Select Untested | 1.75 | 9.50 | 17.00 | 120.00 |
| Tested | 3.00 | 14.75 | 25.00 | |
| Select Tested | 4.00 | 23.00 | 42.00 | |

Write for prices on larger quantities than 100.

**THE FARMER APIARIES, Ramer, Ala.**

**Where the Good Queens come from**

QUALITY
TIN CANS
FIRST
For PACKERS and MANUFACTURERS of FOOD PRODUCTS
LARGE CAPACITY
LONG EXPERIENCE
YOUR INQUIRIES SOLICITED
W.W. BOYER & CO. INC.
BALTIMORE, MD.

**LILLY'S**
Established 1885

Seattle
Yakima
Ellensburg
Wapato
Portland

**HEADQUARTERS FOR**

**LEWIS BEEWARE**
**DADANT FOUNDATION**
**WESTERN PINE HIVES**

*Write Us. It Pays*

**LILLY'S**
Established 1885

**The Chas. H. Lilly Co.**
Seattle, Yakima, Portland

**PORTER BEE ESCAPE SAVES HONEY TIME MONEY**

PORTER
BEE ESCAPE
PATENTED

**For sale by all dealers.**
**If no dealer, write factory**
**R. & E. C. PORTER, MFRS.**
**Lewistown, Illinois, U. S. A.**

(Please mention Am. Bee Journal when writing)

A NEW BEE BOOK
"Dadant's System of Beekeeping"
Send for a copy today.
Price $1.00.

# Italian Bees in Packages and Queens by Return Mail or Soon

**Prompt and safe arrival of all bees and queens guaranteed.**

Untested queens, $1.50 each. Select untested queens, $1.75 each.
Tested queens, $3.00 each. Select tested queens, $3.25 each.
Wings clipped free of charge.
1-lb. swarms with young queens, $5.00 each; 6 or more, $4.90 each.
1½--lb. swarms with young queens, $6.25 each; 6 or more, $6.00 each.
2-lb. swarms with young queens, $7.00 each; 6 or more, $6.90 each.
3-lb. swarms with young queens, $9.00 each; 6 or more, $8.90 each.
5-lb. swarms with young queens, $12.50 each; 6 or more, $12.00 each.

The 1½-lb. swarms are especially prepared for our two-pound Canadian parcel post trade. Larger packages over-weigh postal limit. You get full 1½ pounds of bees to the package. We tried this size package ourselves in Northern Ontario last season and had them build up **from June 1st to** strong colonies which, on an average, made over 50 pounds of surplus honey, besides going into winter quarters with plenty of stores.

**What Others Say About Our Bees**

"The two 3-lb. packages bought of you last May did all right. One made 185 sections and gave one swarm, and the other made 296 sections and gave two swarms."

(Name on request), Kimmell, Ind.

"The ten 1-pound swarms bought of you last spring, although delayed in transit, and therefore taking five days to reach me, arrived in fine condition, not a cupful of dead bees in the lot. They did well, more than paying for themselves the first season, and went into winter quarters in fine condition. I have tried queens from several different places and like yours best of all."

(Name on request), Alabama, N. Y.

"We are only one mile from Lake Erie, and exposed to high, cold winds; in fact, this is the windiest place along the Great Lakes. Your bees were able to winter with only an insignificant loss. As for honey, they averaged 175 pounds each of extracted surplus, did not swarm, and gave an artificial increase of 39 per cent, which is as fine a record as can be had in this locality, especially when the work is done entirely by amateurs."

(Name on request), North East, Pa.

(The above were 1-pound packages and were worked by students going to college at this place.)

**M. C. BERRY & CO., Hayneville, Alabama, U. S. A.**

# Bee Supplies from the Wood Eternal

**Bottoms, Covers and Bodies that Defy Decay, Good Material, Good Workmanship, Good Prices**

| | |
|---|---|
| Five ten-frame dovetailed hives, complete | $16.00 |
| Five best ten-frame wood covers made | 5.00 |
| Five ten-frame cypress bottoms, full ⅞ in. thick | 4.00 |

**ITALIAN BEES AND QUEENS**

Guaranteed to give you satisfaction

| | | |
|---|---|---|
| Untested queens $2.00 each | | $18.00 per dozen |
| Tested | | $3.00 each |

**NUCLEI**

| | |
|---|---|
| One frame, no queen | $3.50 |
| Two frame, no queen | 6.00 |
| Three frame, no queen | 8.25 |

**FULL COLONIES**

New painted hives, good combs, young tested queens

| | |
|---|---|
| Colony in eight-frame hive | $20.00 |
| Colony in ten-frame hive | 22.00 |

**POUND PACKAGES**

| | |
|---|---|
| One pound package, no queen | $3 50 |
| Two pound package, no queen | 6 00 |

**SPECIALS FOR THIS MONTH**

Now is your chance to get rid of all inferior covers and replace them with the best wood cover made at a bargain. Eight-frame one-piece covers in lots of 25 at the low price of 60c each.

Special discount on Hoffman frames in lots of 500 to 10,000.

**Send for Catalog. Give us a trial order**

*Nuclei and Pound packages shipped from Mayhew, Miss. or Helena, Ga.*

**THE STOVER APIARIES, MAYHEW, MISSISSIPPI**

**THIS IS THE "SIGN" ON EACH CYPRESS BOARD**

S C
No. of Mill
M A

TRADE MARK REG. U.S. PAT. OFFICE

**DON'T GUESS MAKE SURE. "HAVE A LOOK"**

CYPRESS RESISTS ALL ROT INFLUENCES

For all uses that invite decay (for instance, bottoms) demand

**"ALL-HEART"**

*"Tidewater" Cypress*

"THE WOOD ETERNAL"

The "arrow" on the end of each board identifies the genuine product of the cypress mills whose CHARACTER of timber, methods of manufacture, and complete responsibility enable them to be members of the Association.

THIS FACT IS YOUR PROTECTION.

**ACCEPT NONE BUT TRADE-MARKED "TIDEWATER" CYPRESS**

CYPRESS "THE WOOD ETERNAL"

**SOUTHERN CYPRESS MANUFACTURERS' ASSOCIATION**

1251 Perdido Building, New Orleans, La., or 1251 Heard National Bank Building, Jacksonville, Fla.

Insist on TRADE-MARKED Cypress at Your Local Lumber Dealer's — If he hasn't it, LET US KNOW

**ALUMINUM HONEY COMBS**

Have you Extracting Combs sufficient for those short heavy honey flows?

The shallow extracting Aluminum Honey Comb gives you immediate and adequate storage

PRICE LIST

| | |
|---|---|
| Standard Langstroth (Hoffman brood-frame) size, each | 60c |
| Shallow Extracting (5⅜ in. deep) size, each | 50c |
| Modified Dadant (Jumbo depth) size, each | 70c |

Prices are f. o. b. San Antonio, Texas.

| | |
|---|---|
| Parcel Post weight, 1 comb | 2 lbs. |
| Parcel Post weight, 10 combs | 11 lbs. |
| Parcel Post weight, 20 combs | 20 lbs. |

*Write for our new catalog containing full description and prices on*

**LEWIS BEEWARE, DADANT FOUNDATION, ALUMINUM HONEY COMBS**

**TEXAS HONEY PRODUCERS ASSOCIATION**

**1105 S. Flores St.** **P. O. Box 1048** **San Antonio, Texas**

**E. G. LE STOURGEON, Mgr.**

# AIRCO COMB FOUNDATION

**WHY NOT ORDER IT TODAY ?**

WHY do AIRCO sales run 50% more than last year?

**THINK IT OVER**

WHY were many thousands spent to develop AIRCO?

**THINK IT OVER**

WHY was AIRCO tested in the hives for two years?

**THINK IT OVER**

WHY was the old wax-refining process improved?

**THINK IT OVER**

WHY do bees prefer AIRCO to all other foundations?

**THINK IT OVER**

WHY will the use of old style foundation mean a definite loss to the beekeeper?

**THINK IT OVER**

WHY pay the AIRCO price for foundation that is not AIRCO?

**THINK IT OVER**

WHY pass up an opportunity to test AIRCO yourself, this year?

**THINK IT OVER**

Immediate shipment will be made from our branches and agencies as listed on the back of our catalog, or your order mailed direct to Medina will be filled from our nearest branch or agency, saving you all possible transportation charges.

For your convenience we copy from page 21 of our catalog, order number and prices as follows:

Price per pound packed in boxes as follows

| | Medium | | Light Brood | | Thin | | Extra Thin | |
|---|---|---|---|---|---|---|---|---|
| One 1-lb. box | B511001 | $1.00 | B521001 | $1.03 | B535001 | $1.08 | B545001 | $1.10 |
| One 2-lb. box | B511002 | .95 | B521002 | .98 | B535002 | 1.03 | B545002 | 1.05 |
| One 5-lb. box | B511003 | .92 | B521003 | .95 | B535003 | 1.00 | B545003 | 1.02 |

**Write for our discounts on quantity lots**

**THE A. I. ROOT COMPANY, West Side Station, MEDINA, OHIO**

# AMERICAN BEE JOURNAL

JUNE, 1921

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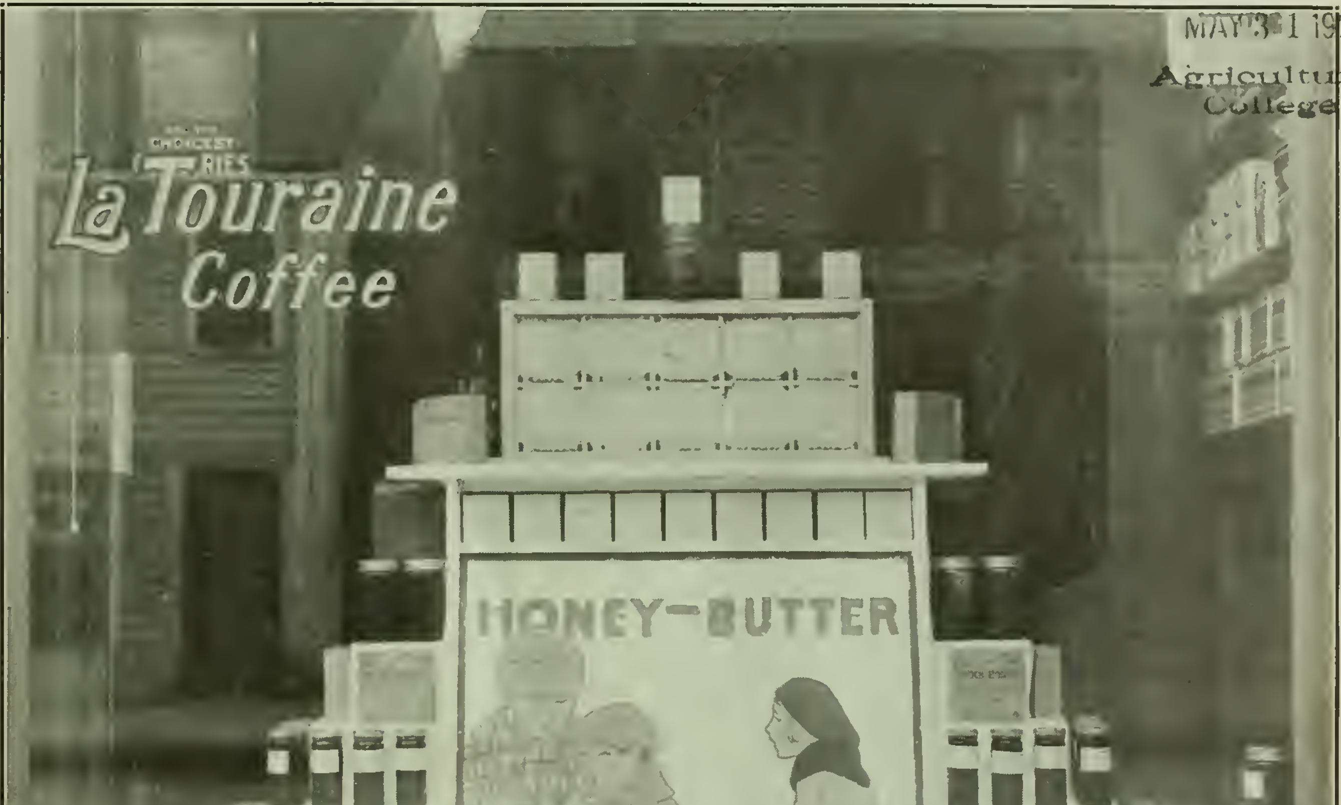
College


CHOICEST
RIES
La Touraine
Coffee
HONEY-BUTTER
FINE FOOD FOR
YOUNGSTERS
HONEY-BUTTER
HONEY-BUTTER

LATHAM'S DISPLAY IN A STORE WINDOW. THE BUILDING ACROSS THE STREET IS REFLECTED IN THE GLASS. SEE HIS ARTICLE IN THIS ISSUE.

**This is a MUTH IDEAL VEIL**

**$1.50 will bring this Veil to you. Direct from us or any G. B. Lewis distributor**

Do you know this fellow?

I can't say anything nice about him here; he wouldn't like it. Funny smile, isn't it? The photographer's not to blame either, because it's just ME—Clif. Muth.

**Have you been stung much this year?**

So have I, but I mean by BEES. If you had an IDEAL BEE VEIL you could smile, too (if the photographer told you to). Really, they're good—Get one.

Did you get a list of our special quotations on supplies? There's a saving on your dollar when you buy from us.

Got any honey you want to sell?

We render WAX from your old combs. Send for shipping tags.

Need any good queens? Dandys, $2.00; six for $10.50. By the way—

That's a good veil.

**THE FRED W. MUTH CO.**
**PEARL AND WALNUT STREETS**
**CINCINNATI, O.**

---

**THE DIAMOND MATCH CO.**

(APIARY DEPT.)

MANUFACTURERS OF

**Beekeepers' Supplies**

**CHICO, CAL., U. S. A.**

Dadant's incomparable Foundation is always kept in stock. Western Beekeepers can be supplied advantageously.

BEEKEEPERS, wherever they may be located, before deciding where to obtain supplies, should write to the Diamond Match Co. for prices and for their Beekeepers' supply catalog.

This Company are the largest manufacturers in the world who make Bee Supplies. They own their own timber lands, mills and factories, and supply goods direct from the tree to the beekeeper.

Full advantage of this low cost of production is given to the purchaser.

The Apiary Department (which is in charge of experienced supply men, who are also practical beekeepers) maintains a constant excellence of product and offers unsurpassed service.

**ALUMINUM HONEYCOMBS**

The Diamond Match Co. and their agents are the sole distributors in the U. S. of the Aluminum Honeycombs, manufactured by the Duffy-Diehl Co., Inc., of Pasadena, Cal. Write for descriptive pamphlets. Eastern beekeepers should send their orders for the Diamond Match Co.'s supplies to **Hoffman & Hauck, 1331 Ocean Avenue, Woodhaven, N. Y.**

**DIAMOND MATCH CO., Apiary Department, Chico, Cal.**

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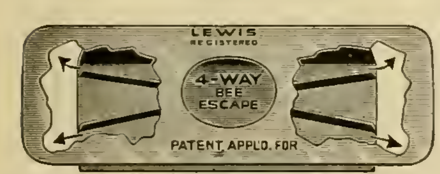
**Lewis 4-Way Bee Escapes**



Four exits from supers. Fits all standard boards. Springs of coppered steel. Made of substantial metal.

Made by
**G. B. LEWIS COMPANY,**
Watertown, Wis., U. S. A.
Sold only by Lewis "Beeware" Distributors.

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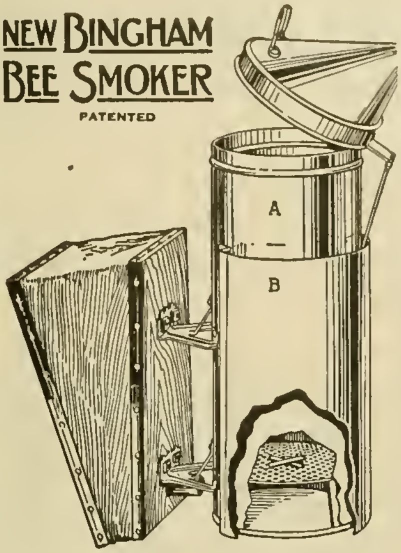


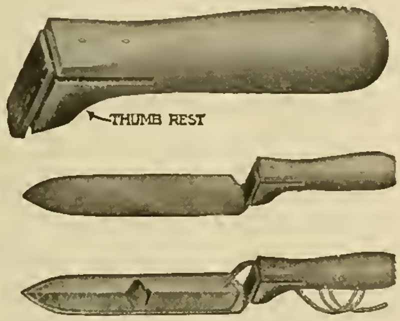
**Buy Bingham Bee Smokers**

On the market over 40 years. The bellows of best quality sheep skin, is provided with a valve, which gives it pep and makes it respond quickly to the most delicate touch, giving as much or as little smoke as is required. The Big Smoke size, stove 4x10 inches, with asbestos lined shield, permits the holding of the smoker between the knees without danger of burning the trousers or one's legs. This size is much appreciated by extensive operators.

| | Size of stove. inches | Shipping weight. lbs. |
|---|---|---|
| Big Smoke, with shield | 4 x10 | 3 |
| Big Smoke, no shield.... | 4 x10 | 3 |
| Smoke Engine ............ | 4 x 7 | 2¼ |
| Doctor ......................... | 3½x 7 | 2 |
| Conqueror ........... ...... | 3 x 7 | 1¾ |
| Little Wonder ............... | 3 x 5½ | 1½ |

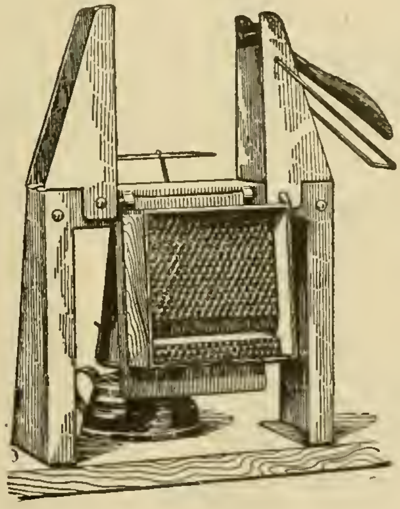
**Buy Bingham Honey Uncapping Knives**

Made of the finest quality steel for the purpose that money can buy. These knives of the proper thickness and quality have given the best of satisfaction, as the old-timers will testify. For over thirty years the men engaged in the manufacture of these knives have been at this work. The perfect grip cold handle is one of the improvements.



**Buy Woodman Section Fixer**

A combined section press and foundation fastener of pressed steel construction It forms comb-honey sections and puts in top and bottom starters all at one handling. Top and bottom starters insure combs attached to all four sides, a requirement to grade fancy. By using this machine you always handle large pieces of foundation. The difficulty of handling the small bottom starters is eliminated, which is not the case with other machines. The section comes away right side up, with the large starter hanging down, which is a decided advantage in rapid work, especially in hot weather.



**Special Sale Honey Packages**

60-lb. cans, 2 in a case, per case in quantity lots, f. o. b. Chicago, $1.30; Detroit, $1.30; Baltimore, $1.25. Friction top pails, f. o. b. Chicago, 5-lb. size, crates of 100, $7.75; crates of 203, $15; 10-lb. size, crates of 113, $12.50 f. o. b. Baltimore, 5-lb size, crates of 100, $7.50; 10-lb size, crates of 100, $11. Clear flint glass Mason jars, with lacquered tin caps and wax liners, pints, per gross, $9; quarts, per gross, $10. Quotations on other packages made on request.

**A. G. WOODMAN CO.**
**GRAND RAPIDS, MICH., U. S. A.**

A SUPERIOR QUALITY
AT LESS COST

# SUPPLIES

A SUPERIOR QUALITY
AT LESS COST

¶ In offering supplies at our low prices, we are interested primarily in reducing the beekeeper's cost of producing honey.

¶ We realize it is impossible for the honey producer to reduce his cost of production unless he can buy his supplies at a reasonably low cost.

¶ Our superior quality supplies at our low prices are the solution to this problem

¶ We invite comparison of our prices on items listed below with the prices being charged by other manufacturers, and we wish to again emphasize the fact that the Diamond Match Co's supplies which we are offering are the best obtainable at any price, notwithstanding competitors' claims of superiority on the mere strength of their higher prices.

On orders amounting to $50.00 or over deduct 5 per cent.

**Hives, Supers. etc., listed below are in the flat and are complete with Hoffman frames, nails, metal rabbets and all inside fixtures**

**ONE STORY DOVETAILED HIVES**

| | | | |
|---|---|---|---|
| Five 8 Frame | - | - | $16.00 |
| Five 10 Frame | - | - | 16.90 |

**SHALLOW EXTRACTING SUPERS**

| | | | |
|---|---|---|---|
| Five 8 Frame | - | - | $6.00 |
| Five 10 Frame | - | - | 6.50 |

**STANDARD HOFFMAN FRAMES**

| | | | |
|---|---|---|---|
| 100 | $8.50 | 500 | $40.00 |

**FULL DEPTH SUPERS**

| | | | |
|---|---|---|---|
| Five 8 Frame | - | - | $8.00 |
| Five 10 Frame | - | - | 9.00 |

**NO. 1 STYLE COMB HONEY SUPERS**

| | | | |
|---|---|---|---|
| Five 8 Frame | - | - | $5.75 |
| Five 10 Frame | - | - | 6.25 |

**SHALLOW EXTRACTING FRAMES**

| | | | |
|---|---|---|---|
| 100 | $6.70 | 500 | $32.50 |

**OUR INCOMPARABLE QUALITY FOUNDATION**

| | | | |
|---|---|---|---|
| Medium Brood | 5 lbs., 82c per lb. | 25 lbs., 81c | 50 lbs., 80c |
| Thin Super | 5 lbs., 90c per lb. | 25 lbs., 89c | 50 lbs., 88c |
| Light Brood | 5 lbs., 85c per lb. | 25 lbs., 84c | 50 lbs., 83c |

Especially prepared beehive white paint ½ gallon cans $2.10

**HOFFMAN & HAUCK, Inc., Woodhaven, N. Y.**

# ANY KICKS—KICK JOE

¶ Our foundation mill man "Joe" who has been with us for thirty-nine years remarked the other day that we showed him the complimentary letters on **"Dadant's Foundation"** but never the **"Kicks."**

¶ Fortunately criticisms come to us so seldom that we were unable to comply with his desire for adverse criticism of his and our product.

¶ Joe started working in the Dadant factory when the whole process was by hand.

¶ Boards were dipped in hot wax, the resulting sheets being piled to cool, and eventually milled on hand mills.

¶ Foundation trimming, papering, lumber sawing, boxing, all was done by hand.

"JOE" SAUGIER

¶ During Joe's time enough Dadant's foundation has been made to fill two million hives and 150 million sections, with full sheets.

¶ The sheets if placed end to end would reach from New York across the Atlantic, through Europe and Asia, thence across the Pacific to San Francisco.

¶ We invite letters of honest criticism on Dadant's Foundation. Joe wants them, we want them, that we may if possible increase the value of our product to the beekeeper and his bees. This follows our policy of continuous improvement of **Dadant's Foundation.**

¶ Comparison of **Dadant's Foundation** with others from the mill or under test with the hive invited.

**DADANT'S FOUNDATION** EVERY INCH, EVERY POUND, EVERY TON EQUAL TO ANY SAMPLE WE HAVE EVER SENT OUT.

*Specify it to your dealer. If he hasn't it write us*

**DADANT & SONS, HAMILTON, ILLINOIS**

*Catalog and Prices on Bee Supplies, Beeswax, Wax Working into Comb Foundation and Comb Rendering for the asking*

# DOLLARS AND SENSE

¶ "The Olympian," a trans-continental train, passes the window every morning at 7:55, rushing toward Chicago. Millions of dollars invested and hundreds of men are required to keep this train "On Time." None object to the fare if the schedule is met, for we **pay for service.**

¶ Mr. Beekeeper outside Wisconsin asks prompt and complete shipment of "Beeware" from his distributor. The investment of thousands of dollars and hundreds of men in woods, railroad, factory and branch make this possible. National distribution is costly but we willingly **pay for service.**

¶ Beside quality and workmanship, distribution is a part of the legitimate cost of "Beeware" to you. Thus better service is possible than a small organization can give. Don't take our word. Spend your Dollars and Sense. **A trial will convince you today.**

LOOK
FOR
THIS

BEE HIVES AND APIARIAN EQUIPMENT
**BEWARE**
WHERE YOU BUY YOUR
**BEEWARE**
WATERTOWN **WIS.** USA
MAKES THE FINEST.
COPYRIGHT, 1916, BY G. B. LEWIS COMPANY

REGISTERED
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# The Honey Producing Possibilities in North Carolina

By Vernon R. Haber, North Carolina State Department of Entomology

By botanists the plants of North Carolina long have been recognized as unsurpassed in variety by those of any other State, with the probable exception of certain States bordering upon the Gulf of Mexico. The flora of this State is intermediate between those of northern and more southern botanical districts, for it is within North Carolina's boundaries that many typically northern plants reach their southern distribution limits, and some of those which typify southern flora have their most northern dispersal limits.

An additional feature which makes possible a much greater variety in the vegetation is that the mountains bordering the western extreme are sufficiently high that the difference in elevation existing between them and the ocean is equivalent to that of from 10 to 12 degrees of latitude. Upon the higher summits of these mountains occur species in both the fauna and flora which are peculiar to those of the mountain regions of New Hampshire, northwestern New York and Canada.

That North Carolina lies in a transition zone is a fact long recognized. The State is located approximately between the parallels 34 degrees and 36½ degrees north latitude, and between the meridians 75½ degrees and 84½ degrees west longitude. From eastern to western extremes it is 503¼ miles long, its most extreme (north and south) width is 187½ miles, with an average of 100 miles. The area of the State is 52,286 square miles, of which 48,666 square miles are land and 3,620 square miles are water. Swampy regions occur chiefly along the Atlantic coast. Their area is approximately 4,500 square miles.

Concerning plant distribution, there are three rather distinctly marked districts or regions in the State. Naming them from east to west they are: (1) the Coastal Plain, (2) the Piedmont or foothills, (3) the Mountain.

### The Coastal Plains

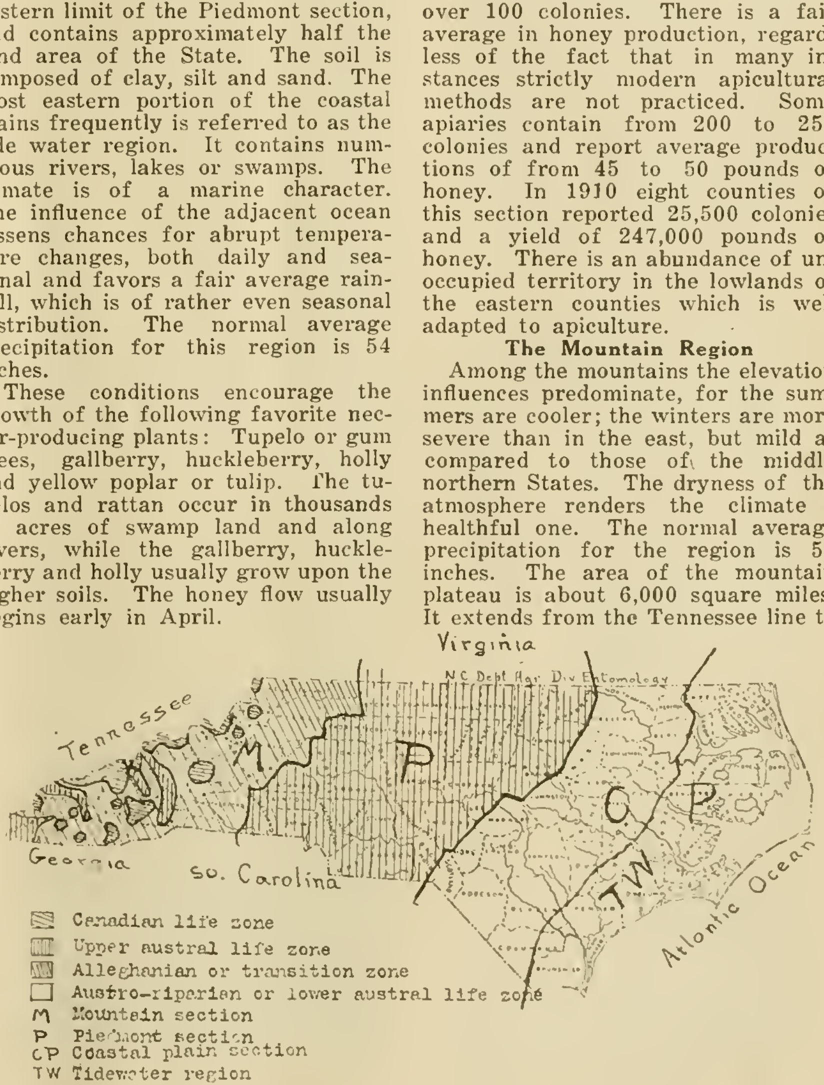
The coastal plains region lies in the Austro-riparian or Lower Austral Life Zone. It extends from the ocean inland about 200 miles to the eastern limit of the Piedmont section, and contains approximately half the land area of the State. The soil is composed of clay, silt and sand. The most eastern portion of the coastal plains frequently is referred to as the tide water region. It contains numerous rivers, lakes or swamps. The climate is of a marine character. The influence of the adjacent ocean lessens chances for abrupt temperature changes, both daily and seasonal and favors a fair average rainfall, which is of rather even seasonal distribution. The normal average precipitation for this region is 54 inches.

These conditions encourage the growth of the following favorite nectar-producing plants: Tupelo or gum trees, gallberry, huckleberry, holly and yellow poplar or tulip. The tupelos and rattan occur in thousands of acres of swamp land and along rivers, while the gallberry, huckleberry and holly usually grow upon the higher soils. The honey flow usually begins early in April.

The coastal plains offer the best opportunities for apiculture. The possibilities for honey production on a commercial basis are indicated by the numerous apiaries which contain over 100 colonies. There is a fair average in honey production, regardless of the fact that in many instances strictly modern apicultural methods are not practiced. Some apiaries contain from 200 to 250 colonies and report average productions of from 45 to 50 pounds of honey. In 1910 eight counties of this section reported 25,500 colonies and a yield of 247,000 pounds of honey. There is an abundance of unoccupied territory in the lowlands of the eastern counties which is well adapted to apiculture.

### The Mountain Region

Among the mountains the elevation influences predominate, for the summers are cooler; the winters are more severe than in the east, but mild as compared to those of the middle northern States. The dryness of the atmosphere renders the climate a healthful one. The normal average precipitation for the region is 55 inches. The area of the mountain plateau is about 6,000 square miles. It extends from the Tennessee line to



Natural regions of North Carolina.

the Blue Mountains. The valleys are fertile, affording some of the most profitable farming areas. This area includes about one-sixth of the land area of the State. It is included mostly within the Alleghanian Life Zone, although upon the higher mountains one comes into the Canadian, while here and there it is interspersed with the Upper Austral or Carolinian. Forests everywhere are composed of numerous kinds of trees. More than 100 different kinds are recorded. The more prominent bee-visited plants are tulip poplar, basswood, sourwood and the clovers. Other plants which yield available nectar are maple, fruit trees, wild cherry, locust, sumac, goldenrod and aster. The honey flow usually begins about mid-May for tulip, and in latter June for basswood and sourwood. Usually the fall flow from aster is sufficiently heavy to supply all colonies with an abundance of honey for wintering purposes. Sourwood is more abundant upon the eastern slope of the Blue Ridge Mountains and in the counties west of Yancey. Basswood is of common occurrence upon the larger mountains and usually is more abundant upon the northern slopes. Buckwheat is raised extensively in Alleghaney, Watauga, Ashe and Avery Counties. Tulip poplars are abundant throughout most of the mountain regions. The best localities are in the sourwood regions or where there are mixtures of sourwood and basswood. There is much unoccupied territory in the mountains, but the beekeepers must exercise careful judgment in selecting localities, for most of the honey comes from forest trees and in certain localities the timber has been mostly removed.

### Piedmont Plateau

Between the previously mentioned regions is the Piedmont Plateau. The Piedmont Plateau extends from the Blue Ridge Mountains eastward to the western limits of the Coastal Plain. In it may be found all gradations of climate between those just mentioned. The climatic conditions of this region favor the growth of a great variety of field, garden and orchard crops. The normal average precipitation is 52 inches. It lies in the Upper Austral or Carolinian Life zone. It is the general farming section and includes about one-third the land area of the State. It has no especially favored localities for honey production, excepting that the upper portions (those nearest the mountains) have a more luxuriant growth of sourwood. The favorite nectar-yielding plants are tulip-poplar, sourwood and the clovers, both crimson and alsike. Many other plants are of nectar-yielding importance. Among them are persimmon, holly, black gum, goldenrod, aster, willow, cow peas, sumac, blackberry, maple and fruit trees. Frequently surplus honey is made from the nectar of aster, which usually yields a prolonged autumn supply. The nectar-producing plants are of rather uniform distribution over the entire area. The honey flow usually begins in mid-April. There are many beekeepers, but the number of colonies kept by each (taken on the average) is rather small. In several counties there are apiaries which contain more than 100 colonies. Many kinds of plants of this section are not reliable sources of nectar every year, but very seldom is there complete failure, and good beekeeping practices soon should overcome any objectionable features which may present themselves. Often from 25 to 30 pounds of surplus honey per colony are produced in autumn from aster alone. The best locations usually are along creeks and rivers, where tulip poplar is more plentiful.

### General Conditions

The mean temperature for the State is 59 degrees F. By seasons it is: Spring, 58 degrees; summer, 76 degrees; autumn, 60 degrees, and winter, 48 degree. Usually January is the coldest month, with an average temperature of 31 degrees, while July, with its average temperature of 81 degrees, is the warmest. The normal average precipitation for the entire State is 52 inches. Although the rainfall is rather uniformly distributed throughout the year, during the months that crops require most moisture, usually, the amount received is the greatest.

Throughout the entire State surplus nectar is obtained from trees and shrubs, comparatively few kinds of which are of much importance in that particular. Among important sources are tulip poplar, basswood, sourwood, tupelos, gallberry and clovers. Sourwood is found chiefly in the mountains and upper Piedmont sections. Clover is most abundant in the Piedmont regions. Tupelos and gallberries are restricted to coastal plains, chiefly to the tide water regions. Especially is this true of tupelos, while gallberries usually occur further inland upon the coastal plains. Tulip trees are found wherever bees are kept, but are most abundant in the mountains. They rank among the most constantly reliable and the heaviest yielders of nectar. The trees bloom in early spring, and in the Coastal Plain section there is an exceedingly early flow from tupelos and gallberry.

In most localities the main honey flow comes early in spring and in the Coastal Plains section it comes exceedingly early. Ordinarily this necessitates exceptionally good beekeeping practices if a maximum honey yield is to be expected. Most of the literature has been produced by beekeepers in the clover sections of the North, where the honey flow comes later and as a consequence, where the colonies in spring have a longer preparation period for it. In these regions usually the queens are longer-lived, for they have longer rest periods during the winters; but the fundamental requisites for maximum honey production are the same everywhere, in that the colonies must reach the maximum point of brood-rearing just previous to the beginning of the main honey flow. In other words, the period of maximum honey flow must be met with an excess number of individuals (that is, an excess number to that ordinarily or usually present). In the South, this spring preparation period is very short, making prompt apicultural practices preparatory to honey flow necessary in rather a more limited or shorter time than they are where the spring preparation period is longer. To meet such requirements most successfully, the bees should have passed the previous autumn under favorable environmental circumstances, such as can result only from the best of apicultural methods. In North Carolina the beekeepers' autumn begins in about mid-August, and after that date a sufficient number of bees must be reared to successfully over-winter the colony.

Raleigh, North Carolina.

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## STATE AND LOCAL ORGANIZATION

By E. S. Miller

Now that the success of the American Honey Producers' League seems assured, it would appear that the honey producers of each State should organize along business lines. The old form of beekeepers' association, with its social and educational features, has served its purpose in the past and doubtless will continue to do so in the future, but the time has arrived when the most important problem for beemen is not the increase of production nor the multiplication of beekeepers. To increase production without increasing marketing facilities means lower prices; it means more honey carried over from year to year with consequent loss to the producer; it means the ultimate junking of high-priced equipment by those forced out of the business. But production is increasing enormously, and there is a prospect of a vastly greater increase in the future. To those with foresight it is evident that something must be done to bring about a more effective method of marketing if the business is to be conducted on a profitable basis.

Honey producers are beekeepers, but only a small percentage of beekeepers are producers of honey to any noticeable degree. It is, therefore, impossible to organize beekeepers, as such, along commercial lines. I believe, however, that honey producers can and will be organized, and the purpose and objects of such an organization should coincide with those of the National League. Its work may be outlined as follows:

1. Marketing—
    Supervision of grading.
    Advertising.
    Standardization of package.
    Crop and market reporting.
    Distribution.
2. Education—
    Disease control.
    Dissemination of information.
3. Equipment—
    Standardization.
    Securing and disposing of bees.
    Purchasing of supplies.

4. Legislation—
Appropriations.
Other legislative matters.

In view of the fact that more honey is being produced than can be disposed of under present marketing conditions, the question of distribution and marketing, as above stated, is a matter of prime importance to those in the business commercially. What is the solution of this problem? As a suggestion, I will venture to offer the following:

Let local units be established; the county, perhaps, being the unit. Where conditions will warrant, elect manager or special agent who will inspect and grade, according to specified rules, all honey belonging to its members and which is to be placed on the market under a State or National seal or guarantee. A State inspector of honey should visit the various local centers from time to time to determine the conditions of sanitation under which honey is being put up and to see that the proper grading rules are enforced. Only members of the State and local organigations are to be permitted the use of the seal, and only after proper local or State inspection.

The State organization may be in the form of a producers' league or association which shall provide for supervision of local exchanges, authorize the use of the seal under stated restrictions and provide a penalty for its misuse; require of local exchanges a semi-monthly report of crop and marketing conditions on blanks provided for the purpose, report to local agents suitable information concerning crops and marketing, report to the national body, which in turn will report to the State membership through the State manager. The State Central Association, through its manager, should serve as a bureau of information in the distribution of honey, bees and equipment, furnishing information both to buyer and seller, thus avoiding unnecessary freight charges to and from large distributing centers as under the present system, and largely eliminating the profits of numerous handlers which often increase the cost to the consumer to three times the amount received by the producer. In case of shortage or surplus within the State, the manager, through the American Honey Producers' League can be placed in communication with conditions of supply or demand outside the State. A system of advertising of League honey should be carried on in the State by the State Association and local advertising by the local agents with the advice and assistance of the State manager. The State manager should, through the local exchanges, see that every retail grocer is constantly supplied with certified honey, put up in standard containers bearing the seal of the National League.

It should be the duty of the State organization to work in harmony with the American Honey Producers' League in the matter of grading and standardization of packages as well as in crop reporting and marketing and in the dissemination of information. In forming a State League, buyers, supply dealers and all allied interests should be permitted an associate membership.

In order to carry out the plan outlined, a considerable amount of money will be necessary, but I am confident that producers are willing to pay for actual service that will assist in making the business profitable. The project may be financed in one or more of several ways. The manner of securing funds must be determined by the needs of the associations formed. The following is suggested:

1. A charge for use of seal.
2. A membership fee with privilege of use of seal.
3. A charge for inspection of honey.
4. A commission on sales through County or State Manager.
5. A per colony tax on bees belonging to members.

Under a system of careful inspection and grading, an approved system of handling, proper advertising of certified product under National seal, honey should bring a higher price and no real producer can afford to stay out of the association. In case honey not certified is sold by non-members, either at a higher or lower price, it will not materially affect the retail price of certified honey.

Is the scheme outlined above practicable? Probably in certain States and under certain conditions it would not be. I am offering it as a suggestion only, and many defects doubtless will appear. Many difficulties will be encountered in putting it into operation, but after eliminating the unworkable features, I believe that here is the nucleus of the system which ultimately will prove practicable and will bring about a better distribution and consequently an increased demand and better prices for our product. What do you think?

Indiana.

Mr. Alex. Livshitz, of Palestine, and the senior editor. Mr. Livshitz's visit was mentioned in our May number.

## TWO AND ONE-HALF PER CENT

By E. G. LeStourgeon

Steady now, beekeepers. Don't jump to any rash conclusions. The heading of this article does not refer to any ruling of Mr. Kramer relative to the "kick" allowed in "home-brew." Things are not always what they seem.

The other day I took a look at a whole lot of statistics. Let us say, musty statistics. All good writers now-a-days use the good word "musty" when referring to statistics. Anyhow your humble scribe was doing this very musty thing in the hope of finding a moral for the beekeepers of America. While absorbed in this more or less meritorious but very slightly remunerative task, we (note the modest pronoun), discovered that there are over 80,000 beekeepers in the United States. Now this must be true, because several sets of the aforesaid musty statistics average the same, and no one has contradicted it.

As we (still modest), delved more deeply into the figures of the erudite and bespectacled statisticians and their array of facts and figures we uncovered the 2½ percent that we started our sermon about. No, assuredly, it was not alcoholic content. It was something good. While being good, it was small, pitifully small. It is up to you, dear reader, to tell me why it was so small, and to help make it larger.

We issued, last month, a bulletin of the American Honey Producers' League. We mailed it to exactly 2,280 beekeepers. We mailed it to every member of the League and many who we hoped would become members. We mailed it to 2½ per cent, only, of the beekeepers of America.

The League movement has been on foot nearly two years and only 2½ per cent of the beekeepers of America are enrolled. Why? How much have you done? Do the beekeepers of America want a National League? Do you want one badly enough to send in some names for us to send our literature to?

Whether your State is affiliated or not, you can become a sustaining member of the League upon the payment of $10 into the League treasury. The League needs the money. It is doing a great and good work for the beekeepers of America, and you can help yourself and the honey-producing industry by giving the League your financial and moral support. We are awaiting your answer. This is a personal message to YOU and to every American beekeeping interest. Are we only 2½ per cent, or are we 100 per cent interested in our business?

San Antonio, Texas.

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# THE EDITORS' VIEWPOINTS

### Government Recognition of Beekeeping in France

An unknown friend sends us a copy of the April 8th number of the "Journal Officiel" of the French Republic, in which we find a speech by Senator D'Estournelles de Constant, comparing recovering France to "a hive which barbarians have devastated, but whose bees are reconstructing their home." From this simile, he turns to a consideration of beekeeping and calls attention to the fact that bees "not only furnish the honey which would have proved so serviceable in war time, but are a blessing for several of our crops. Bees are the hyphen between the flowers in our meadows as well as in our orchards. They fertilize our gardens, our plains and even our mountain slopes."

This leads to an eulogy of beekeeping and of the products of the bees, while mentioning the writers on bees from Virgil to Maeterlink and Bonnier. The upshot of this speech is a demand for a greater official recognition of beekeeping and laws to absolutely prohibit the sale of artificial honeys. A promise is made for greater recognition of beekeeping in the Agricultural Ministry, in future.

### A Similie on Bees in Homer's Iliad

We have just mentioned a similie on bees in the speech of the French Senator D'Estournelles de Constant. We find in the New Standard Dictionary a quotation from Anthon's Homer:

"As the bees came forth continually in fresh numbers, so fresh bands of Greeks keep continually pouring forth from the ships and tents."

Bees often prove a good example to human beings.

### Misunderstanding

It seems that some have not understood the reference to the failure of the Aluminum Honeycomb Company which appeared in our December 1920 issue. This was the original Aluminum Honeycomb Company, of California, and not the Texas Company, which manufactures a similar comb. The company first organized was placed in the hands of a receiver some months ago. Later the equipment was sold to Duffy-Diehl, of Pasadena We believe that both firms now advertising aluminum combs in this journal are responsible, and that they will fill orders promptly. We especially regret that one foreign bee paper confused the bankrupt concern with the Aluminum Honeycomb Company of Texas, of which E. G. LeStourgeon is manager.

### C. C. Miller's Memorial

The subscription for a scholarship to the memory of Dr. Miller is going very slowly. Of course, many will expect to send their donation this month, at the anniversary of Dr. Miller's birth, when he would have been 90 years old. Besides, we can hardly blame the American people, for being slow on a subscription of this kind, in view of the fact that so many millions are going to the starving people of Europe, China and Armenia. That is laudable. But now, friends, if you intend to do your part in this Miller memorial, **do it now.** If we don't get enough for a scholarship we may build a monument. But if Dr. Miller has ever done you any good through his advice, and he has done good to many, remember him, if it is ever so little.

### John Burroughs

The death of John Burroughs, on his way home from California, on March 29, removes one of the greatest nature lovers, with keen powers of observation and a most pleasurable ability in descriptions. He was a bee-lover. His essays, in "Birds and Bees," giving "An Idyl of the Honey-Bee" and "Pastoral Bees," are delightful reading, though at times there are slight errors in his appreciations. But there are jewels, also. We read:

"I have a theory that when bees leave the hive, unless there is some special attraction in some other direction, they generally go against the wind. They would thus have the wind with them when they returned home heavily laden, and with these little navigators the difference is an important one. With a full cargo, a stiff head-wind is a great hindrance, but fresh and empty-handed they can face it with more ease. Virgil says bees bear gravel stones as ballast, but their only ballast is their honey bag. Hence, when I go bee-hunting, I prefer to get to windward of the woods in which the swarm is supposed to have taken refuge."

And, of course, the bees cannot smell the flowers, unless these are in the windward. So Burroughs was surely right.

### A Good Move

The American Honey Producers' League is undertaking a number of things for the benefit of the craft. One of the latest is the appointment of a committee which will endeavor to arrange the conventions of the various associations in consecutive order. This is an arrangement very much to be desired by the speakers who make a practice of attending conventions, since they can attend more meetings with less travel and with great saving in expense. It will often make it possible for conventions to secure speakers who would otherwise be unable to attend. There are many beekeepers, also, who will find it easy to attend two or three conventions where they have only been attending one. Such a plan should serve to increase the attendance at the meetings as well as making it much easier to prepare the programs.

### It Looks Easy

Beekeeping looks like a "snap" to those who know nothing about it. A newspaper clipping recently came to this office which paints a pleasing picture of the profits gathered for the farmer by the bees. According to this particular newspaper story, the only time which the farmer needs give them is the time necessary to hive the swarm. He can then move the bees after dark, to the place where they are to remain, and need not bother to remove the honey until late in the fall, when his other work is all done. It is stated that only a few minutes are necessary to do this, and almost any odd time will serve the purpose. This is about the idea of beekeeping entertained by the average man. It reminds us of one of Secor's poems which runs as follows:

"I am one of them happy beemans
Who don't have to work any more;
I sit all day in the apple tree shade
And smoke mine pipe by the door."

One very good turn that the colleges are doing for the industry is to educate the public to the fact that beekeeping is a man's size job, which requires a full day's work to make any profit.

### Our Exchanges

Although the American Bee Journal is probably the most costly publication on bees, published each month, we are exchanging free, with every bee publication in the world, in any language, that desires the exchange. A number of publications that came to us either stopped temporarily or disappeared, since the beginning of the world war. These publications which resume will be welcome and the Journal will be sent them when we receive their magazine marked "Exchange."

### Not All Dead Yet

There is a common saying that "Fools are not all dead yet." In proof that the saying is true one has only to read the current comment on beekeeping subjects appearing in the newspapers. It seems that no matter how fantastic a statement may be, the average newspaper reporter is always ready to pass it on as a gospel truth.

For some time past there has been a story going the rounds of the press of an immense cave somewhere in Texas that is occupied by hundreds of swarms of bees. These bees, according to the story, have been there for many years and have been storing up their honey until there is now available some millions of pounds. In fact, the latest clipping to come to our attention has increased the quantity from mere millions and now gives the figures in billions of pounds.

It is reported that the delegates to the recent Indianapolis meeting enjoyed a whole evening of fun at the expense of a gullible promoter who had secured an option on this mythical cave and who proposed to organize a stock company to secure and market the enormous store.

It now appears that some eastern people have taken the story so seriously that they have employed an engineer to visit Texas and locate the cave and ascertain whether the building of an immense packing plant there is feasible. At last accounts the engineer had arrived in Texas, but was having difficulty in finding the location of the cave.

### Workers and Queens

"Whilst most bee books speak of the marvelous manner in which the workers can raise a queen from a worker egg, the reverse is actually the case, and the miracle performed thousands of times oftener, since the queen is bound to reproduce herself each time she lays a fertile egg, and the rearing of workers from queen eggs the more wonderful occurrence." (Gilbert Barratt, quoted in October-April Bee World.)

Why did we never see it in that light? Even Mr. Langstroth spoke of the wonderful change which the queen-cell and the better food produced, while it is really as Mr. Barratt says; for the wonder is that the bees be able to rear neuters instead of fully developed females in each worker cell.

### Swarms

Most of us do not wish our bees to swarm naturally. Our apiary may be located among high trees, where a swarm is unpleasant to bring down. Or we may be away on business, with no one to watch the bees. We may not want any increase in the number of our colonies and, if we do, we prefer to make the selection ourselves of the hives that will furnish the increase.

If we have young queens in our hives, few drones, large brood-chambers, plenty of empty combs, or at least plenty of room in the supers, ample ventilation secured by raising the hive from the alighting board until the bees do not lie outside in clusters, and, last of all, good shade, either artificial or natural, we have our colonies in the best possible condition to avoid swarming. The amount of natural swarming will then be probably less than 10 per cent, and often less than 5 per cent, of the number of colonies, spring count.

But if our bees do swarm, let us enjoy the pleasure. If we have empty hives in readiness, so that they may be placed in a suitable spot immediately after the swarm has clustered, we may enjoy the sight of the most exciting of all bee pranks.

Did you ever watch a hive during the exit of the swarm? No matter how large the entrance, there does not seem to be enough room for all the bees that try to go at one time. If you open the hive during that exodus, you will see them fly out from every comb, just as if they were so many robbers frightened away after filling themselves. The "home feeling" is gone; their thought is on going, no matter where.

If you can catch the queen, as she emerges (and she does not always emerge among the first), you may make the hiving of the swarm a very short business. All you need to do is to put her in a cage, remove the old colony to another spot, with the cage containing the queen on the alighting board. In a little while, though the bees may have clustered, they will perceive that the queen is not with them and will return to the old spot. But the old colony may be too much deprived of bees by this method, and it is well to either replace it on its stand, putting the swarm in a new spot, or give it a quart or two of young bees from the swarm.

The hum of swarming bees is a delightful sound. Read what the great Huber wrote concerning it:

"Do you hear any discord in this numerous concert? This soft humming is, to my sense of hearing, composed only of accurate tones. This aerial music goes straight to my heart; I acknowledge that I never heard it indifferently; is it possible that what I find in it expressive, touching, melancholy and even solemn, comes only from myself or my imagination? I will not deny the natural exaltation which rises within me through this interesting event and this apparent agreement in will and sentiment in beings that are placed (by us it is true) almost at the foot of the scale.

"Are the people with imagination more or less happy than the others? If the pictures which they paint for themselves always come to life, they are surely to be envied, for, being masters of their palette, being always able to select their colors and assort them properly, their horizon is made up mainly of pleasant perspectives. They are accused, however, of sometimes painting too flattering images and to welcome with too much partiality air castles upon which wise and cool minds would never have stopped."

Huber holds that the humming of the bees in a swarm composes harmonics which form a perfect chord "to me the most ravishing of all, when it is performed by 15,000 or 20,000 bees, workers and drones."

In the issue of a swarm, there is not only a very harmonious sound; there is also a highly perfumed odor composed of the different scents of the honey, the pollen and the wax, all blended together in the natural odor of the little honeybee. There is no odor of the sting, if they are properly handled, for bees, at swarming, are always peaceable, since they are all filled with honey and are bent upon seeking a new home, where they will again begin their active life of work.

### The Beeswax Market

From the Oil Paint and Drug Reporter, we glean some interesting statistics regarding the imports and exports of beeswax, together with prices in this country for the past four years. The imports have been as follows:

1917—2,858,190 pounds, worth $994,159.00.

1918—1,558,048 pounds, worth $584,194.00.

1919—2,383,901 pounds, worth $896,327.00.

1920—4,142,931 pounds, worth $1,418,023.00.

During this same time our exports were small in comparison to our imports, as the following figures will show:

1917—256,467 pounds, worth $95,751.00.

1918—165,382 pounds, worth $63,244.00

1919—210,046 pounds, worth $92,285.00.

1920—632,811 pounds, worth $294,592.00.

During the year 1919, the market price is given as 36 cents per pound, at the low point, and 45 cents at the highest. By the close of 1920, the price had fallen as low as 18 cents per pound, on the same markets. It will be seen that the foreign wax coming into American markets in 1920 was nearly three times the amount received in 1918 and the price had fallen to less than half that of the year 1919.

### To Stop Robbing

Mr. Charles Boone Saunders, of Indiana, writes about a method of stopping robbing; he says:

"The best method I ever learned is to use half kerosene and half water, in a Mason jar with holes in the lid as in a pepper box, and sprinkle the colony with it that is being robbed. The robber bees soon leave it, but it will kill bees if you get too much on them. One should be careful and use it sparingly.

"Let those who have never tried it give it a trial."

All unpleasant smelling drugs are good, but they should be resorted to only when ordinary means fail.

## HONEY PRODUCTION IN THE DADANT APIARIES

### Showing the Results of Two Seasons During Adverse Conditions in the Central Mississippi Valley

By H. C. Dadant

FOR many years past the Dadant apiaries have not had the sole attention of one person. Yet on the average the apiaries pay well. The past two years were among the discouraging ones. 1919 was turned to good account by moving a large number, and 1920 paid out in spite of considerable expense and crop shortage caused by too much flood, followed by drought at nectar secretion time. The poorest season in years was tided over without loss, which helps materially to bring up the average. Crops like that produced in 1916, of 235 lbs. per colony on a spring count of 525 are worth building for.

Colony records were kept on the hives as usual. A daily record, as shown, can be written up in a minute of time before leaving the apiary, and is an accurate basis for figuring the season's expenditure as well as reliable notation for reference before the next trip is made to that apiary.

The Dadant home apiary is well located in hilly country among pastures producing white clover. Here, as at the outapiaries, a large crop of white clover honey is harvested one year and a fair crop two seasons out of every five, on the average. Fruit bloom in April and May, and locust in May, precede the white clover crop of June and July. Then comes some basswood the latter part of June, followed by buckbrush, horsemint and catnip in July, these latter preceding the fall crop of heartsease and Spanish needle, which usually lasts from August 10 to September 15. This fall crop may even continue until frost early in October. At the end of the season come, also, some asters, goldenrod and other fall blossoms. Our main crops, however, are white clover, June and July, and Spanish needle and heartsease, August and September. It is those dates for which we build up our colonies. Volunteer and cultivated sweet clover and an occasional field of alsike are good yielders and sometimes produce some surplus from June until September.

Our apiaries may be classified as upland and bluff line apiaries. The latter are those located from the Lima Lake region north towards Warsaw, Illinois, along the highway which borders the east side of the Mississippi River lowlands shown. These include the apiaries of Koch, Sack, Gillam, Hill and Spencer. Heartsease and Spanish needle are the principal yielders for these places. A good white clover crop is also harvested in favorable seasons, as broken pasture lands lie just east of them. The permanent upland apiaries of LeMaire, Poland, Holland and Home are best located for the white clover crop of June and July, although during favorable wet seasons a very good fall crop is also secured.

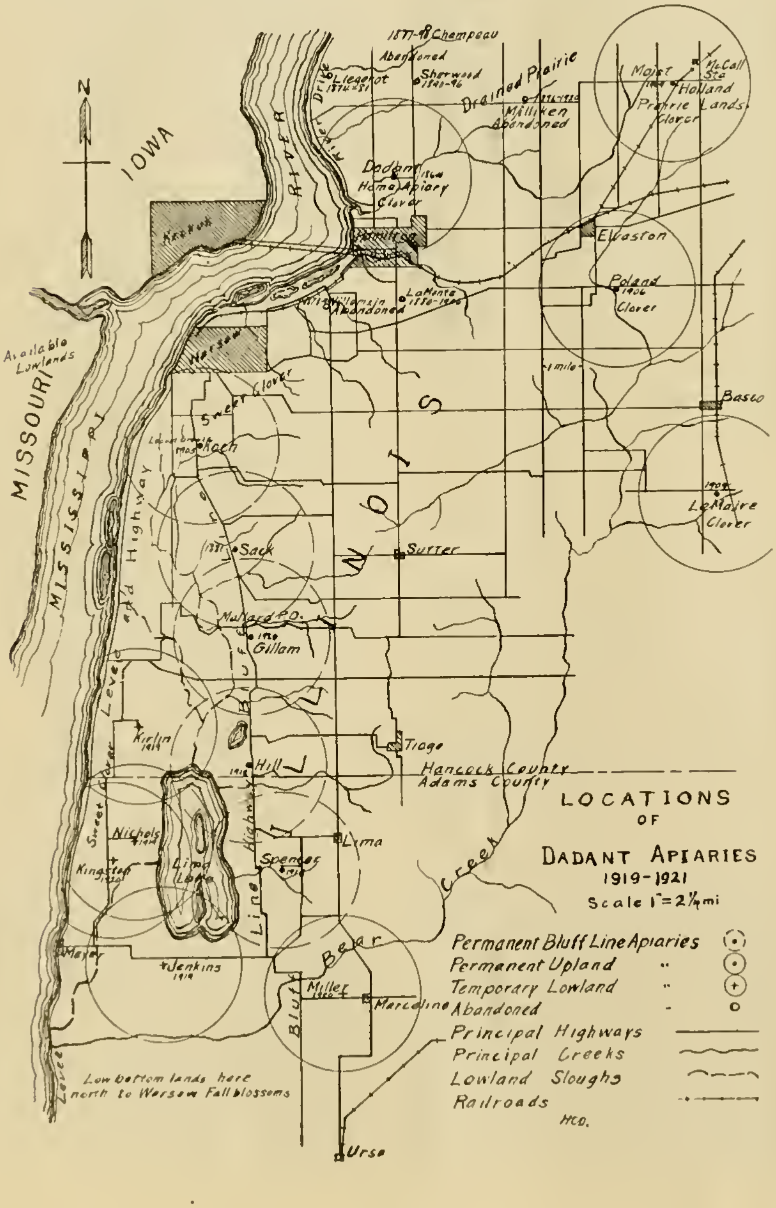
The circles of four miles diameter around each apiary show the average area which bees will cover, as it has been ascertained by observation that they usually do not fly over two miles for nectar. Frequently, however, they may go in certain directions to good fields, depending considerably on the contour of the country, and perhaps elevation. We have very frequently noticed that the color and flavor of honey harvested at the apiaries of Koch and Sack are different.

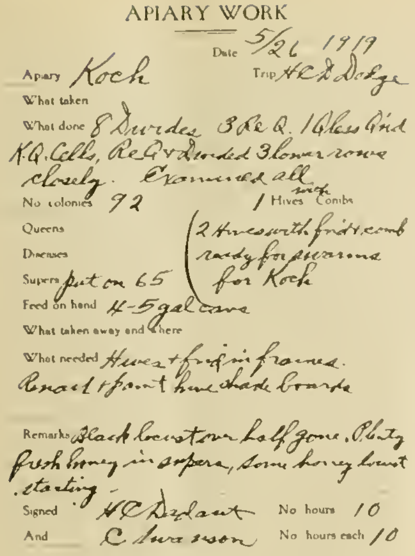
With a 1919 spring count of 530 colonies and the advance knowledge that there was fair prospect for a flow of fall honey on the Mississippi River bottom, located on an average of 25 to 30 miles from the five upland apiaries, an increase of almost 30 per cent was made during May and June by the aid of considerable feeding of sugar syrup. Most of these new colonies were built up to six-frame strength in advance of the moving.

The apiaries of Spencer, Hill, Sack, Koch and the new permanent location, Gillam, very seldom fail furnishing a fall crop from the river bottoms, their location being three to four miles apart along the bluff line of this territory. Many of these bottom land locations, along various rivers tributary to the Mississippi, as well as flat and undrained high prairie lands, are as good fields for nectar as the best upland districts are for clover, on the average. Favorable seasons for clover usually occur in this locality twice to three times in five years. One year in five a fair fall crop may be secured in the upland districts. It is conservative to say that during two years not more than ten to twenty-five colonies of bees, on an average, can be profitably kept in most drained upland districts. Therefore it is highly advisable to find temporary bee pastures in localities from 5 to 30 miles from the permanent apiary site.

By the chart, notice that the range for bees at Spencer apiary is somewhat restricted by being directly east of the heart of Lima Lake. This location may be abandoned soon for one farther south.

Ninety per cent of the colonies and supers comprising the five upland apiaries—totaling about 300—of the Dadant home, Poland, LeMaire, Milliken


N
IOWA
MISSOURI
MISSISSIPPI
RIVER
Keokuk
Available Lowlands
1877-98 Chempeau
Abandoned
Liegeot 1874-81
Sherwood 1891-96
Drained Prairie
Drainage
Milliken Abandoned
Moyet
McCall Sta
Holland
Prairie Lands
Clover
Dadant 1864
Home Apiary
Clover
Hamilton
Elvaston
Poland 1906
Clover
Williamson Abandoned
LaMonte 1880-1900
Warsaw
1 mile
Basco
Sweet Clover
Koch
Sack
Sutter
ILLINOIS
LeMaire
Clover
Mallard P.O.
Gillam
Bluff
Highway
Levee
Kirlin 1919
Hill
Tioga
Hancock County
Adams County
Nichols 1919
Kingston 1920
Lima Lake
Lima
Spencer
Meyer
Jenkins 1919
Miller 1920
Marcelline
Bear Creek
Low bottom lands here north to Warsaw Fall blossoms
Urse
LOCATIONS OF DADANT APIARIES 1919-1921
Scale 1" = 2¼ mi
Permanent Bluff Line Apiaries
Permanent Upland
Temporary Lowland
Abandoned
Principal Highways
Principal Creeks
Lowland Sloughs
Railroads
HCD.



APIARY WORK

Date 5/26 1919

Apiary Koch Trip H.C.&Dodge

What taken

What done 8 Divides 3 Re Q. 16 [illegible] K.Q. Cells, Re Q & Divided 3 lower rows closely. Examined all

No colonies 92 1 Hives with Combs

Queens

Diseases

Supers put on 65

2 Hives with fdn & comb ready for swarms for Koch

Feed on hand 4-5 gal cane

What taken away and where

What needed Hives & fdn in frames. [illegible] & paint hive shade boards

Remarks Black locust over half gone. Plenty fresh honey in supers, some honey bound starting.

Signed H C Dadant No hours 10

And C Swanson No hours each 10

Daily record used in the Dadant apiaries.

and Holland were moved about July 20, 1919 by two motor trucks and placed in the midst of the waste land fields grown up in Spanish needle, heartsease and other fall blossoms. These locations, as shown, were Kirlin, Nichols and Jenkins. The map shows how well this lowland territory was covered by 700 colonies of bees in eight locations. As permanent outapiary locations are hardly practical in the lowlands, on account of bad roads during spring months, and the spring clover crop would be limited, the three temporary locations were thus established and placed three or four miles apart, in a line about parallel to the five permanent apiaries on the bluff. In this way, wedge-shaped territory measuring about four miles wide at the south end and one mile at the north end, seventeen miles long, was occupied. No doubt if this migration had not been done, heavy feeding to save these upland apiaries, during August, September and October, would have been necessary in order to carry the spring count of 544 colonies over for the next year. It is doubtful, too, whether a sufficient quantity of sugar or good honey could have been obtained to feed all the colonies. The result from the colonies comprising the 30 per cent increase was also gratifying. They built up well by October 1 with plenty of honey for the winter, and many of them produced as much as one to two supers of surplus. The crop resulting shows an average of 75 pounds per colony for a spring count of 544, or 60 pounds for a fall count of 700.

Because of the failure of the spring flow, some heavy feeding of sugar syrup was done, as the 6,000 pounds of sugar recorded testifies, same being used during the spring and summer months. Half was used to build up the 30 per cent colony increases made, while the other half was fed to carry the bees through the summer until the fall crop arrived. About 500 pounds of sugar was fed after the fall honey flow, to provide brood-chambers which contained a very large percentage of brood and a small quantity of honey.

There was but little annoyance or loss of bees from swarming. The swarming recorded is about 4 per cent in 1919 and 2 per cent in 1920. With a little closer attention during the height of the honey crop, the last ten days of August, swarming could have been reduced one-half in 1919. A shortage of supers for some of the stronger colonies caused a crowded condition, which must always be avoided ahead of the height of a honey flow. A few swarms came from colonies headed by old queens. The various factors well known to control and almost prevent swarming were practiced, and may be mentioned in the order of their importance:

1—Young queens.

2—Large brood-nests with combs built from full sheets of comb-foundation.

3—Plenty of extracting supers filled with drawn combs in shallow supers.

4—Plenty of ventilation and shade, including spacing of frames 1½ inches center to center.

5—No queen excluders.

6—Very few drones.

Although there was not sufficient honey flow at any of the apiaries in 1919 to carry the colonies along properly before August 1, there was not an entire lack of nectar. For instance, at the Dadant home apiary, where an increase of 50 colonies was made from a spring count of 59, there was a little steady honey flow from 16 acres of sweet clover, during July, which was sufficient to furnish about as much nectar as the quantity of sugar syrup fed. At the Hill apiary, there was a light flow of honey from various sources, after June 10, lasting until the fall crop, which began about August 1. At the Sack apiary there was one light flow during the last 10 days of May, which was only sufficient to help brood-rearing for about two weeks. Consequently, more feeding had to be done, there, before the fall flow started. At the Koch apiary, there was the usual ten days' flow from black locust during the last days of May. This necessitated the placing of many supers on hives and destroying some queen-cells in order to prevent swarming among colonies

**Investment**

| | 1919 | 1920 |
|---|---|---|
| Honey houses and equipment (owned previous to 1916). | $1000.00 | $1000.00 |
| 550 1-story hives, no bees, at $6.50 | 3575.00 | 3575.00 |
| 150 1-story hives, new, no bees at $9.75 | | 1452.50 |
| 1375 supers at $1 | 1375.00 | 1375.00 |
| 375 supers, new, at $1.50 | | 562.50 |
| | $5950.00 | $7965.00 |
| 550 colonies bees at $5.00 | 2750.00 | |
| 700 colonies bees at $5.00 | | 3500.00 |
| | $8700.00 | $11465.00 |

**Receipts**

| | 1919 | 1920 |
|---|---|---|
| 41,800 lbs. amber fall honey at 18c | $7524.00 | |
| 462 lbs. beeswax at 40c | 184.80 | |
| 156 colonies increased bees at $5.00 | 780.00 | |
| 13000 lbs. clover honey at 20c | | 2600.00 |
| 12000 lbs. amber fall honey at 15c | | 1800.00 |
| 275 lbs. beeswax at 35c | | 96.25 |
| | $8488.80 | $4496.25 |
| Expenditures | 4603.10 | 4361.16 |
| Profit | $3885.70 | $ 135.09 |

**Expenditures**

| | 1919 | | 1920 |
|---|---|---|---|
| Labor— | | | |
| Dadant, 704 hrs at $1 | $ 704.00 | 133 hrs. at $1 | $ 133.00 |
| Help 3053 hrs. at 40c | 1221.20 | 2325 hrs at 55c | 1278.75 |
| Mileage (without driver)— | | | |
| Ford, 3334 miles at 10c | 333.40 | 530 miles at 11c | 58.30 |
| Dodge 1380 miles at 12½c | 172.50 | 3464 miles at 14c | 484.96 |
| Trucks 1638 miles at 22½c | 368.55 | 782 miles at 25c | 195.50 |
| Sugar— | | | |
| 6000 lbs. at $9.85 | 591.00 | 6532 lbs. at 20c | 1306.40 |
| 500 lbs at $12.51 | 62.55 | | |
| Queens— | | | |
| 658 at 80c | 526.40 | 131 at $1 | 131.00 |
| Small equipment | 50.00 | | 50.00 |
| Barrels used 1 year— | | | |
| 76 at $1 | 76.00 | 45 at $1 | 45.00 |
| Rentals—Cash | 200.00 | | 200.00 |
| Decrease in Colonies— | | | |
| Bees only | none | 16 colonies at $5 | 80.00 |
| Depreciation on Investment— | | | |
| 5 per cent on $5950.00 | 297.50 | 5 per cent on $7965.00 | 398.25 |
| | $4603.10 | | $4361.16 |

headed by old queens. Later all this nectar was consumed, and a little feeding was done before the fall flow began. The apiaries at Milliken's and Holland's both experienced a little flow, from white clover, which was sufficient to carry them through the month of June. The remaining apiaries, Spencer, Poland and LeMaire, were heavily fed with sugar syrup, and most colonies in those apiaries were short of stores before June 1.

In beekeeping, perhaps as much or more than in any other occupation, the operator must know what to do and do it in time. Even the older, experienced beekeeper, cannot afford to slight his bees at a time when they need attention. An example of this occurred at our Sack apiary, during the middle of May, when 70 of the 81 colonies were found on the point of starvation. This shortage of food had gone to such an extent that not only had the queens ceased laying and no honey could be found in the hives, but the bees had actually killed all their drones and were uncapping sealed worker brood, as well as dragging out the larvæ. An experience of this kind, to amateurs, might easily be mistaken for a bad case of disease throughout an apiary. In spite of this setback, however, this apiary, upon being promptly fed, was carried for two weeks, until the honey flow from black locust came, the latter part of the same month. Eventually, this apiary did very well for the season, as the record testifies 10 barrels of nice fall honey harvested.

Annual migration, for honey crops, is not a common thing in the Mississippi Valley, but is being practiced with profit more and more in recent years. 1919 was our first on a large scale. To get full returns for the effort and expense, bees must reach the field in time to get the full benefit of crop yield at the temporary location.

When the spring of 1920 opened the prospects were about the same as the previous year. Considerable moisture, however, brought about a small flow of white clover, which eventually turned out to be 12,000 pounds, half of the year's crop. Too much moisture caused a late growth of the producing weeds of the lowlands and many of them did not mature before September. Added to this drawback, a drought set in at the time when nectar secretion should have been at its best, and in that way the fall crop for 1920 was cut in two.

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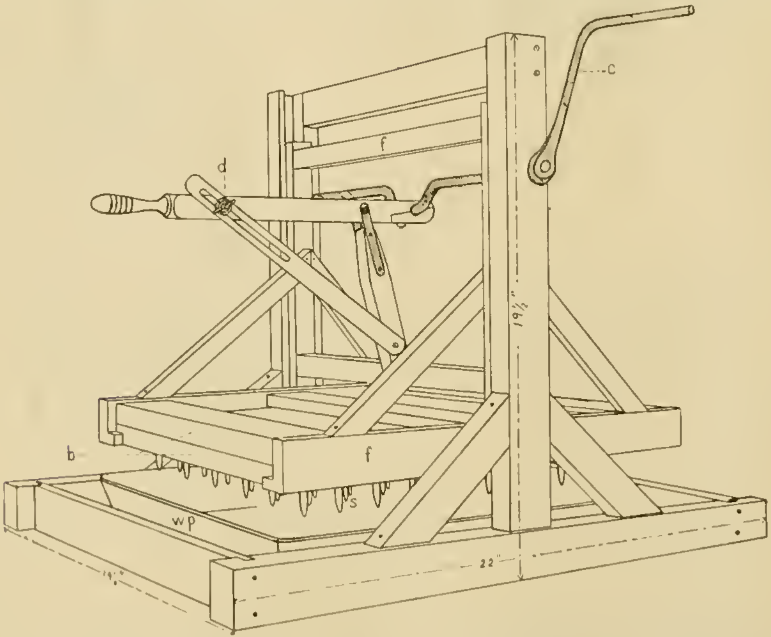
## ECONOMY IN THE PRODUCTION OF QUEEN BEES

### Part II.—Dry Grafting Into Artificial Wax Cups

By Geo. D. Shafer

At least as early as 1888, and perhaps before that, Doolittle had grafted very young worker larvæ directly into "perfectly dry queen cells," and had succeeded in having these accepted and finished on the combs of a colony preparing to swarm. When he began using artificial cups of wax, however, he followed the practice of placing a portion of fresh royal jelly (about the size of a BB shot, taken from any unsealed queen-cell) in the bottom of each cup, just before grafting. By smearing the bottoms of artificial cups with royal jelly in this way he found that a much larger proportion of them would be accepted. This practice of "wet grafting," as it may be called, is generally recommended by queen breeders and by books on beekeeping. Pratt, however, claimed that his "Swarthmore swarm-box" made it entirely unnecessary to place royal jelly in the cups before grafting, and he did not follow that practice. He saved time by grafting directly from the worker-cells into the dry artificial cell-cups, and the bees in his swarm-box were so eager to feed **young** larvæ that they accepted the little larvæ in the artificial cups and began feeding them royal jelly at once. "Dry grafting" in this manner is practiced by Wing in preparing bars of cell cups to be given his swarm-box hive, with the same excellent results. In "dry grafting" it must not be inferred that the little larvæ become at all dry themselves during the transfer, for such is not the case, if proper larvæ are taken. Huber established the fact that larvæ in worker cells are fed with royal jelly for about the first three days after they hatch. Doolittle says (Page 29, "Scientific Queen Rearing," sixth edition): "So far as I am able to judge, the larva in a worker cell is surrounded by three times the food it can use for the first thirty-six hours of its existence." This certainly seems to be true in the case of all worker larvæ **in colonies where there are plenty of well-fed nurse bees.** In the "dry grafting" referred to here, only such larvæ, about two days old, surrounded in the worker cells by an abundance of white royal jelly are used. In taking up these larvæ to transfer them to the artificial cell-cups, a goodly amount of the jelly is taken up and transferred with the larvæ to the cups. The little fellows can suffer in no way, therefore, since within a few minutes after the grafting process they are being fed again by the eager nurse bees in the swarm-box hive.

The artificial cell-cups of wax used by Wing are home-made by dipping—cups being obtained like those described by Doolittle. These are preferred, because the edges of the cups are thinner than those of the waxen cups made by compression—more like the edges of queen-cells under construction by the bees. In the long run, he believes, the thin-edged cells made by dipping yield a greater proportion of large well-finished queen-cells than the thicker edged, shallower compressed cups. Moreover, he has learned how to make the cups, by dipping on a large scale, just as cheaply as the compressed cups may be turned out. Forty-eight of the usual cell-sticks are nested in a board (9x14 inches) so that all the sticks may be dipped into water at the same time and then into a pan of melted wax, uniformly, five or six times. The machine shown in the accompanying figures makes it possible to raise and lower the nest of cell-sticks uniformly by simply turning the crank "c." Forty-eight cell-cups are thus dipped at one operation just as quickly as a single cup is turned out by twirling one stock in the manner first described by Mr. Doolittle. The cell-stick board "b" may be readily removed from the apparatus. In practice, three separate boards of cell-sticks are provided. While one set of cell-sticks is undergoing the preparatory soaking and cooling in



The home-made cell-cup dipping machine of Mr. J. E. Wing, San Jose, Calif., used for dipping 48 cell-cups at one operation. "b," cell-stick board; "s," cell-sticks; "w p," wax pan; "f," supporting frame for cell-stick board, "b," which is raised and lowered by turning "c." "d," slot device for adjusting the supporting frame "f" quickly, so that the cell-sticks will dip into the wax to the proper depth, as the work of dipping proceeds, and the melted wax is gradually used from the wax pan.

water, a second is being dipped by the machine, and from the sticks of the third board, which has just been removed from the machine, an attendant is removing the finished cell-cups. Thus, as fast as one board is ready to be removed, another is ready to be inserted, and the uniformly neat cell-cups are turned out at a rapid rate. These home-made cell-cups are fastened with a drop of melted wax upon thin, flat wooden cell-bases, instead of upon the well-known cylindrical wooden cell-cup bases. Each flat wooden base is about three-fourths of an inch square and one-sixteenth of an inch thick. The flat cell-bases are stuck, with wax, upon plain wooden cell-bars three-fourths of an inch wide, and the latter are supported in an ordinary Hoffman frame. In practice it is not found necessary to melt the wax each time in order to fasten these bases to the cell-bars. After they are once coated with beeswax, it is only necessary to press the little bases down firmly upon the bar to make them stick. This may be done most rapidly before the cell-cups are fastened to the bases. The advantages of these thin, flat cell-bases are that they may be cheaply made at home in large or small numbers, cheaply replaced if lost, and in introducing a ripe queen-cell into a colony or nucleus by pressing it against a comb, the thin edge of the flat base will mutilate the comb much less than is apt to be the case with the larger cylindrical cell-cup base.

The author has sometimes made use of the flat cell-cup bases in another way, which may be of interest to those acquainted with the "Alley plan" of obtaining queen-cells on strips of comb or with any similar plan of obtaining queen-cells on new comb. Alley placed a new comb of worker cells in the brood-nest of his breeding queen for about four days, until he obtained eggs and hatching larvæ in this comb. He then carefully brushed it free of bees, took it to a warm room, and with a thin, sharp, warm knife, so as not to bruise the comb, he cut it through every other parallel row of cells into long strips. The cells of the row on one side of each strip were now trimmed, or "cut down to within one-fourth inch of the midrib, and from this row of cells on each strip a row of queen-cells was obtained. Now in case of the Alley plan (or any similar plan) the queen-cells must necessarily be separated and carefully cut from the strip of comb before they can be distributed to different queenless colonies or nuclei, or to nursery cages. This distribution of queen-cells can be much more conveniently accomplished, of course, when the cells are built on separate bases; and it is possible to so modify the Alley plan (for example) as to have queen-cells started on the flat wooden bases without the necessity of grafting or using artificial queen-cell cups. Having prepared strips of "cut-down" comb by the Alley plan, carefully cut across these so as to divide them into many small pieces, each containing a single cut-down cell. Ten or twelve pieces (with larvæ of the same size) are now selected for each cell bar, and one of these little pieces of comb is fastened to each flat cell base on the bar with a drop of wax just above the melting temperature—the untrimmed side of the little piece of comb having been touched to the drop of wax in every case. By this means each cell base on the bar will present one "cut-down" cell containing its little larva surrounded with royal jelly. When cell bars prepared thus are suspended in a swarm-box hive in the usual way, the bees accept most of the larvæ in the "cut-down" cells and so start queen-cells on the separate cell bases. Grafting into artificial cell-cups is to be preferred; nevertheless the method just described is practical, and might be used to advantage by those who for any reason find grafting difficult.

California.

## TOO MUCH HONEY FOR QUEEN-REARING

By Nathan Martin

I was interested in the article entitled "Too Much Honey," by John Protheroe (March number), and feel prompted to tell you some of my experience along similar lines. It is coming eight years, this spring, since I started beekeeping, with two colonies. I now have 48 colonies.

I was much interested in queen rearing, almost from the start, and feel much indebted to Mr. Doolittle. It appears there is still considerable controversy about this question. I feel convinced that it is far better to rear the queens than buy them of breeders. I have bought only a few, and always found that queens reared here were superior, in that their colonies were better for honey gathering. I run for extracted honey and have averaged over 100 pounds per colony for the past 3 years. I like to have good colonies requeen themselves, which they often do in second or third season. I have had colonies that stored over 150 pounds when queen was in third year, so I have no use for too frequent requeening. To avoid having the cells buried in comb, and comb honey at that, I provided a new frame, last season, in which the cell bars are near the bottom, and where the top part is screened. If this vacant space wasn't screened, comb would be built in it, or the sides of adjacent combs bulged in, greatly interfering with its manipulation.

The nearer the bottom they are, the less honey bees put there. This worked fine in height of honeyflow, when used on strong queen-right colonies in second super, and I got a nice lot of queens from colonies that stored between 150 and 200 pounds of honey.

In practice I find some things different from what noted authors claim. For instance: I have never found it necessary to feed cell-building colonies, but I don't attempt such work in a dearth of nectar. Early in the season, before supers are on, I am obliged to dequeen a colony if I want grafted cells built out, but not afterwards, when the honey season is good. When selecting strong colonies for cell building, I take the gentle ones, those that need no smoke for opening the hive; for I look at them quite often. My plan is to restrict swarming, but I like to make use of swarming queen-cells when they occur on valuable and gentle stocks. From this means I have propagated some of my best colonies.

You aver that a queen doesn't lay in a completed queen-cell (one made at beginning for that purpose). I think she does. Here is my proof: Take a strong colony having several incipient queen-cells built, but no brood in them. If you dequeen this stock, no cells will be completed on these foundations, but rather over worker cells. If you let this colony go ahead with its swarming program, you will find, at first, eggs in these previously built queen-cells, and later on, the fully developed peanut-shaped swarming cells, so different from those emergency cells.

Canada.

## THE PRINCIPLES OF BREEDING APPLIED TO BEES

By Geo. A. Coleman

It is now a commonly accepted and well understood fact that the physical basis of all living things is the cell, a small portion of living matter usually enclosed in a thin membrane and containing a well defined center called the nucleus. The great majority of cells are concerned only in the building up and maintainance of body structures (tissues, organs, blood, etc.), but a few, called the germ cells, are set apart for the special function of reproduction. These are developed in the generative organs as eggs in the ovaries of the female and as sperm in the testes of the male.

### The Beginning of a New Individual

The germ cells contain living material known as germ-plasm, which is composed of elements a part of which pass unchanged from generation to generation and carry the characteristics of the individual and of the race down the line of descent. As a result of mating there is a mingling of the germ plasm of two individuals carrying inherited characters of both. The queen mates but once, when she receives enough sperm from the drone to fertilize her eggs throughout her period of active production.

The characteristics of the new individual, resulting from the union of male and female germ cells is found to be determined by certain bodies in the nuclei of the cells known in scientific parlance as chromosomes (colored bodies), which are brought over in equal numbers from each parent with the exception of an odd body known as the X chromosome, which determines the sex of the new individual. All the chromosomes but the latter are in pairs, and their number varies with the kind of animal or plant, varying in the domestic animals from 40 to 48. The cells of the queenbee have 32, while those of the drone have only 16.

Usually, before fertilization, the male and female germ cells pass through a preparatory process during which the number of chromosomes is reduced one-half and at fertilization, therefore, the union of the egg and sperm gives rise to a cell having the characteristic number of chromosomes, one-half coming from the mother and one-half from the father. The peculiar odd chromosome may be present in the fertile egg from only one parent, or from both parents, and it has been found that the pairing of this body from both parents always results in the new individual being a female. The male results from an egg bearing only one X chromosome.

In the honeybees, the process of parthenogenesis (virgin birth) gives an unusual result, because the unfertile egg of the queenbee is able to produce a new individual, but since it carries only one of the X bodies, from the mother, this individual is always a male. The sperm of the drone also always carries one X body and its union with the X body in the egg of the queen, therefore, always gives rise to a female. This easily explains the peculiar phenomenon so confusing to beekeepers but so valuable in breeding.

### Mendelism

Scientific breeding has been developed from the investigations of Gregor Mendel, an Augustinian monk, who first published his results in 1865. Essentially, Mendelism is an attempt to explain heredity on a statistical basis, and its operation is best illustrated by some of Mendel's own experiments. By crossing tall and dwarf sweet peas he obtained hybrid plants, all of which were tall like the tall parent, but when the seeds from these tall hybrids were grown, three-fourths of the plants were tall, like the original tall variety, and one-fourth were dwarf, like the original dwarf variety. Continuing the experiments, Mendel found that these dwarf plants of the second generation bred true, producing only dwarf plants; but of the tall plants, one-third only bred true, the other two-thirds producing three-fourths tall hybrids and one-fourth dwarfs.

Mendel studied hybrids involving several pairs of contrasting characters and found that, in every case, one member of each pair of characters was expressed unchanged in the hybrids, whereas the other member of the pair became latent, and its presence could only be detected by growing the progeny of the hybrids. Those characters, which were expressed unchanged, Mendel termed dominant characters, while the latent ones he called recessive. In the above experiments, for example, tallness was dominant and dwarfness was recessive. The dominant character possesses a double significance, since either a uniform progeny of dominants can be secured or hybrid progeny in which one-fourth of the offspring displays the contrasted recessive character.

Since Mendel's time a vast number of experiments have been carried on, using animals like rabbits, guinea pigs, or white mice, which breed very rapidly, and insects like the fruit fly, which can be produced under artificial conditions with great rapidity. The principle of Mendelism has been found to hold good in all. Recent experiments by Wilmon Newell in the breeding of selected queens and the crossing of races show that the honeybee is no exception. He found that pure Italian queens, mated to Carniolan drones, produce only Italian drones, and Carniolan queens, mated to Italian drones, produce only Carniolan drones, which is strictly in accordance with Dzierzon's theory. However, the daughters of these hybrid queens produce both Carniolan and Italian drones, produce them in equal numbers and do not produce any other kind. The practical application of this is that the only test of an Italian queen's mating is found in the color of the drones produced by her daughters. The term "tested queen," therefore, as it is ordinarily used, is a misnomer, as far as pure mating is concerned.

A group of Italian railroad men receiving instruction in beekeeping from Inspector Joseph Montagano, of the Construction Office at Velletri, Province of Rome.

### Hereditary Characters

Every breeding animal should be absolutely perfect physically, since it has been found that animals, physically defective at birth, are apt to transmit their defects to their offspring. It is therefore necessary that the breeding queen be absolutely perfect physically, and just as much attention should be given to producing and having, in the mating yard, only the most mature and perfect drones.

### Fertility and Fecundity

Fertility is of next importance. The term signifies the ability of the mother to produce active, living young. Fecundity is used to designate the potential reproductive capacity of the individual. In the motherbee it can be measured accurately and directly by keeping a record of the number of full frames of brood produced during the season. A few seasons' work of accurate record-keeping will show that there is a wide variation, even with the best selected stock. In general, it will also be found that queens of the greatest fecundity are those of the largest size and the most perfect physical development.

The factors which affect fecundity are varied. The environment of the queen undoubtedly has much to do with her egg-laying ability. For accurate results, therefore, the queen breeder must supply the proper equipment, especially an abundance of room in the brood-chamber, and plenty of food, in order that there may be no checking of egg production. Otherwise how can he expect the queen to demonstrate her ability? Get rid of all cramped brood-chambers, small hives and baby nuclei.

### Inbreeding

Darwin concluded that all organic beings benefit from an occasional cross, and that the inevitable result of continued inbreeding is loss of size and a decrease in vigor and fertility. At times, also, there is an increased tendency towards malformations. Recent investigations, however, have shown that inbreeding, accompanied by selection for high productiveness, results in maintaining the fertility of the race. It was also found, though, that low fertility sometimes acts like a Mendelian recessive, appearing in alternate generations, and it would seem, even from these experiments, that inbreeding holds dangerous possibilities.

### Prepotency

It was an early observation of animal breeders that some animals possess a superior power of impressing their offspring with their characteristics. This peculiar power is termed prepotency. The existence of prepotent animals cannot be denied, although by just what means their prepotency is expressed has not yet been determined. Bees are no exception, since we have instances of great fertility in certain queenbees which have become of unusual value as breeders.

### Inheritance of Disease

Disease is an abnormal process exhibited in some part of the body and dependent for its initial impetus upon some external cause. Obviously, if we accept such a definition as this, there cannot be such a thing as the inheritance of disease. It has been demonstrated, however, that certain conditions in the body which predispose it to disease are inherited. The fact that a disease may reappear in successive generations does not constitute inheritance, since successive generation may often be subjected to **the same conditions** of life which favor predisposition to the disease, and the disease will, therefore, appear as often as the proper external stimulus is applied.

Fortunately, it appears that in general, the normal state of health is the dominant condition and that predispositions are dependent for the most part upon the action of recessive factors. The most striking examples of heredity taints occur in the human race and it is a matter of grave concern that fully 30 per cent of the population of the earth should be burdened with some physical defect inherited from ancestry. The animal breeder does not propagate his defectives. He rigidly culls them out, and the few defectives which do occur from generation to generation are immediately condemned, as far as breeding purposes are concerned. We should follow this rule persistently, and with the greatest care, in queen breeding.

### Immunity to Disease

As far as bees are concerned, immunity to disease is a matter of producing queens of such perfect physical development that they are able to produce practically one hundred per cent perfect workers which will give larvæ adequate attention and food, producing in them a high degree of resistance to disease.

### Use of a Pedigree System

The only rational method of determining which individuals are best for breeders is one in which a careful record is kept of the ancestry for at least four generations, and of the behavior of the individual queen for at least two generations. It is not necessary to go back of the fourth generation, since in the fifth generation there would be thirty ancestors to record, and beyond this it would be an endless task with no practical benefit. The most important part of the record is the behavior of the individual breeding queen. In order that we may have such a pedigree system established, the author proposes the following, which has been in use in his own breeding yard for the past five years, and has been practical and of value

First—The selection of all breeding queens upon a basis of constitutional vigor and vitality, measured by performance in egg-laying and the length of breeding season, the number of full frames of worker brood, in a year, to be the test of fecundity.

Second—The performance of the workers as shown by their record in honey production.

Third—Selection of queens whose progeny have never shown a disposition to disease of any kind.

Fourth—The selection of drones for mating from queens which show as good a record as the breeding queens, and preferably from a different strain of bees.

Fifth—The use of a pedigree by which it will be possible for the breeder to tell the parentage, for four generations at least, of any breeding queen.

In the establishment of such a system, it is first necessary to discover the queens which have the quality desired, and the best way of doing this is by selection. The breeder should first secure tested queens from as large a number of proved strains as possible and from these queens, and their daughters, he may select for his own stock. The author has been using this system and the results have been surprising in many ways, disappointing in some, perhaps, but finally resulting in a few strains of Italians which have given a good account of themselves. From these strains, the author proposes to select tested queens and breeders, and to give them as wide a distribution as possible, in order that they may be tried out under varied conditions. Record cards will be furnished with each queen, for a record of her performance, and this card is to be returned so that we may have a check on our breeding stock. We will thus be able to eliminate queens which are not strictly up to standard.

California.

## CONTRADICTIONS

By Jess Dalton

A common method of requeening is to kill the old queen and give a ripe cell. I have never had uniform success by this method, often losing three-fourths of the cells introduced. No matter whether I waited two minutes or two days before giving the cells. Last summer in raising queens and making increase, I often had a surplus of cells. To use these cells I often took three frames of brood and placed them in a nucleus box, inserted a cell between them, shook a few pounds of bees into it, closed the box and placed on a stand. I lost practically none of these cells.

I have practiced running virgin queens in with smoke for years with fair success. Last summer I had 18 small colonies to requeen. Just 18 virgin queens were saved, and choosing favorable conditions I smoked them in. I had grown so confident of success that no provision was made for failure. I never had such a failure, nor have I any clue as to the cause. I lost 17 of the 18.

I have had two queens in one hive time and again under the supersedure impulse. I have also had a few mate from an upper story over an excluder accidentally, with a laying queen below. Although I have tried to repeat the same condition, I have never been successful—not once.

To introduce a laying queen I placed her with the cage open between two frames of emerging brood, from which all bees had been brushed. These frames are placed in a super with a newspaper between it and the colony below. This greatly reduces the loss.

There are a lot of things very hard to account for. There are more contradictions in the bee business than in any other with which I am acquainted.

Louisiana.

## CARE OF MAILED QUEENS

It often happens that a beekeeper receives a few queens from the breeder and cannot use them at once. Perhaps the weather is bad and he is unable to work in his apiary, or he fails to find promptly the old queens which he desires to replace. In order to preserve, in the best possible shape, the queens which have been received, they should be kept in a dark, quiet place, of even temperature. If there are several queens and the beekeeper uses only a few at a time, each cage should be looked over carefully and the one which appears to be the least lively should be used first. Very often the cages contain a dead bee or two, and these should by all means be used as promptly as possible.

Queens, if packed properly with the right kind of sugar candy, live several days in quiet confinement. The quieter they are kept, the less they are handled, the longer they will live; if handled in daylight they attempt to get out of the cage, and worry.

Sometimes the candy does not have sufficient moisture, and it is well to put a drop or two of water on each cage. It is not because the bees need water, as they can go a long time without it, but if the candy is hard, it helps them to soften it.

Keeping caged queens right over brood-combs in a queenright or queenless colony is practiced also, but one must be sure that the bees of the hive cannot get to the candy of the cage. The bees of a hive will feed any number of queens, in cages, even if they have one of their own, but they will allow the caged workers to starve.

In any case, queens should be used as promptly as possible after being received, and instructions for introducing must be very carefully followed. If introduced during a dearth of honey, late in the evening is the best time to put the queen in. The old queen may be killed at any time during the day, or she may be caged and the new queen introduced in her place after everything is settled and robbers have ceased to roam about. The queen is then introduced with much less danger of the bees taking a dislike to her than if she is put in while the colony is still excited.

As a matter of course, if queens die while held in this way, the shipper is not responsible. Breeders guarantee safe arrival and should not be liable for any delays after arrival. But many a queen could be saved that is lost because of careless handling. I have seen queens in cages handed around for hours among the children of the family out of curiosity and as if they were a thing to play with. They require great care, their future fertility depending upon the attention given them, and that is what prompts this statement.

## BEES WHICH WOULD NOT ACCEPT A QUEEN

By Rev. Albert R. Rue

In your January issue I read with interest the article by Eugene Holloway entitled "Colony of Bees that Would Not Accept a Queen." It is of much interest to me because of some unique experiences I had this summer along the same line. In June I ordered a dozen pure Italian queens from a well-known breeder of queens in the South. I introduced them according to directions, as I had often done before. Most of the colonies accepted the queens as soon as they were gnawed out of the cages. Two gave me difficulty.

One colony had a young queen in the spring, superseding a pure Italian that I had introduced the year before. I did not like her, and so killed her, immediately introducing the new queen from the South. After about a week I opened the hive, as I did the others. I found most of the queens laying, but there was no sign of a queen in this hive. I was pretty sure they had killed her, because they had a fine array of queen-cells started. I took all the cells out and sent for another queen in the Southland. She arrived in six days. I introduced her in the same way. About ten days later I went into the hive to see what had happened. I found not a sign of a queen anywhere. I then sent South for another. In about a week she arrived. I went into the hive and looked it through very carefully to be sure they had not slipped one over on me, and hatched a queen for themselves. There was no sign of anything to indicate a living queen. Then I introduced the third queen in the same way. After a week I looked into the hive and found no queen. I waited another week and looked again, thinking that maybe the third queen was there, but was delayed in laying because of the long trip from the South. But there was no queen in the hive.

Then I was just wondering what to do next. I felt I had spent enough money and time on that swarm. I planned to let them raise one of their own. I took a frame of fresh eggs from a hive that two months ago accepted their queen, and gave it to this swarm. They immediately started queen-cells, and in due time hatched out a fine queen. She was certainly a beauty. I think I never saw a finer young queen the second day after she had emerged. It was getting late, and there were few, if any, drones in my apiary besides those in the hive with the young queen. She was fertilized during the week following, and had time before going into winter quarters to lay just a few eggs on two different frames.

The other of the two colonies worked differently. They had a jet black queen, being a wild swarm I found on a bush. I killed her and introduced one of the twelve queens, the same as all the others. While she remained in the cage waiting for the bees in the hive to release her, the bees had built some queen-cells on one of the outer frames. I saw them there when taking the center frames out a week later to see if the bees had accepted the new queen. I found her on the center frames and laying. It was at this time I saw the small quen-cells on the side frames. Three weeks later I opened the hive to take a little look at things. I saw a few fine Italian bees crawling about, just as baby bees. There was some other capped brood emerging and ready to emerge. Then there seemed to be nothing else but fresh eggs. I knew something was wrong, and on further investigation I found the pure Italian queen was gone, and they had raised a young queen, black as black could be, from the eggs of the former queen in the hive.

Those two colonies are in winter quarters, both with queens of their own choice, and not those that I wanted them to have.

Iowa.

Part of the apiary of O. E. Timm, Secretary of the Nebraska Honey Producers' Association. This yard averaged 75 pounds per colony of surplus.

## DIFFICULT QUEEN INTRODUCTION

By W. E. Joor

After reading the experience of Mr. Eugene Holloway in the January Journal, and also the editor's answer, it has occurred to me that a little further comment might be of interest.

Of course the editor is right that the best time to introduce a queen is immediately after the removal of the old queen, but sometimes we have to introduce her to a colony that has been queenless some time.

I had a colony at one time that refused everything I offered them. They were blacks that I was trying to Italianize. It was getting late in the season and I had about concluded to break them up. However, I had a queen (fine, pure-blooded, but old) that had been superseded several times successively, having been switched several times to other hives while being superseded. She appeared very feeble and I despaired of her living more than a week or two. I opened the black hive without smoke and dripped her on the frames and put back the cover. Three days later she was laying "to beat the band," and brought the colony safely through the winter. I secured several good queens from her the next spring before she was finally superseded.

Another case: A colony swarmed and lost its virgin and had developed laying workers. I had been sick, so I could not get to them before this condition developed.

I also had a colony with a 2-year-old queen that was not holding her end up. I took her out and in a very careless, hurried way, smoked her into the laying worker colony, which was in a leaky hive, all of which was against probable success. In due time there was plenty of capped worker brood.

Now why? Other experiences support my explanation, which suggests the remedy for a colony long without a queen.

A queen that is old or apparently failing, or even feeble from starvation, will not be attacked by bees, (sometimes in a queen-right colony, until she has recovered.) Therefore, introduce to the long queenless hive an old or feeble queen, by either the smoke or starvation methods. You do not value the colony much, for the bees are generally old, and you do not value the queen much, because she also is old and perhaps never was much good. Therefore the risk is small. By old age or starvation (till the queen is nearly dead) or the smoke method, they will generally be accepted. Never use a cage method under such circumstances, unless you keep the queen confined nearly a week, making sure no young queen or cells are developed, and then, generally, you are likely to fail.

When your old worthless queen is at work and thoroughly at home, then as the colony is queenright, replace her with the queen you want in the hive, by any method that you normally succeed with.

Another oversight, I think, by Mr. Holloway, is given in his article. Two virgins hatched on two different occasions. Why was this permitted? Only one cell should have been allowed to emerge.

However, these long queenless colonies are generally not worth much anyway.

Texas.

## WHY IS A DRONE?

By Arthur C. Miller

Search me, I don't know; but I do know they are strange fellows of many peculiarities. Their coming, staying and going is as the wind which bloweth where it listeth. One year they appear weeks ahead of the usual time in almost all of the colonies, and perhaps in mid-season scarcely one can be found. Again some fall, as in this one, the workers start early to drive forth the drones, and then suddenly the drive ceases and then drone-brood in all stages appears in the hives. Also this year much superseding has been observed as late as the first of October. Why are drones allowed in solid ranks to cover outlying sealed brood? I venture to say they gathered there to keep themselves warm and the workers withdrew to the inner recesses. And why did the workers desert the outlying brood and leave it to the care of the drones?

Why are colonies with an excess of drones more apt to swarm than are those with few drones? What have the big, lumbering, lazy fellows to do with the swarm impulse, anyway?

If odor of a colony is carried by a bee and governs its reception by an alien colony, then why are drones permitted to come and go at will into any colony they chance upon? Surely they did not shed their home odor.

Now drones do possess a sex odor and when they are abundant in a hive their presence is easily detected by a smell at the entrance if the apiarist has a keen sense of smell. Some persons have an exceptionally keen sense of smell and can develop and train it, and make it useful in bee culture, even if it is oft an annoyance to its possessor when compelled to enter a crowded conveyance.

Can we, by a more complete knowledge of drones, their presence, abundance, habits, retention and expulsion, judge of colony, weather and crop conditions? Surely there is much yet to be learned about the burly, noisy, hungry drone.

Rhode Island.

## BEE FEED

By A. F. Bonney

During the past few years the price of cane sugar was so high, and it was so difficult to get, that I fed honey, both for winter stores and brood rearing, and am now glad that it happened, for there is no question in my mind that honey, the natural food of the bees, is the best thing to give them. Of course we know they will live when given sugar syrup, just as a child will exist on a makeshift diet, but as we know the child will not improve, either physically or mentally, we may assume the bees will not. They will lack something.

At a time in the past I secured a sanmple of the "invert sugar," largely advertised as a winter feed for bees. An examination of it led me to think it was not made of cane sugar. While investigating this I had been trying to invert cane sugar without using an acid. I knew that a syrup made by percolation would not crystallize in months, but as I could not figure out any chemical change, I finally gave up and wrote to Park, Davis & Co., who turned my letter over to Mr. J. M. Francis, their head chemist, as I expected them to do. I wish to call attention to his remarks, that "the invert sugar which you refer to as being put on the market is probably not made from cane sugar . . . . and: "I should be very wary of feeding those bees before I had demonstrated by practical experience that it would not cause disease during the winter months."

The Francis letter follows:

"Invert sugar can be prepared, and in fact is prepared, from cane sugar by heating in the presence of a little dilute acid.

"There is absolutely no reason to assume that invert sugar would be formed from cane sugar by age or exposure to the oxygen of the air.

"Theoretically, cane sugar syrup, if slightly acidulated might produce a trace of invert sugar on long standing at comparatively warm temperature. One could hardly expect, however, that there would be any appreciable amount produced in this way.

"I am rather inclined to believe, therefore, that if you could learn the true history of the sample of syrup which you found not to show any tendency to crystallization, you would find that it originally had been invert by heating after the addition of a little citric or tartaric acid in preparing it for bee feed.

"The invert sugar which you refer to as being put on the market is probably not made from cane sugar at all, but is undoubtedly prepared by a chemical process from starch or some other very much cheaper material. In other words, this commercial invert sugar is very likely to rank pretty close to the artificial dextrose or glucose which is now prepared in enormous quantities and procured at a relatively cheap price. I should be very wary of feeding these to bees before I had demonstrated by practical experience that it would not cause disease during the winter season."

## HONEY BUTTER

By Allen Latham

One of the greatest drawbacks to successeful marketing of extracted honey is its tendency, indeed almost certainty, to candy. I find people in general very suspicious of candied honey, and that much argument and considerable skill are required to convince the average person that granulated honey is pure. Even when convinced, they are convinced against their will, and, I fear, "are of the same opinion still." A very determined campaign of education is vitally necessary, and this article is intended as a gun to help in this campaign.

One of the strongest arguments that can be offered is that arising from the injury done to honey through heat. I find that people will listen when I tell them that unless honey is heated and kept hot for a long time before it is bottled it is very likely to granulate. As granulation in the glass jars hurts the sale of the honey, the bottler is likely, in his efforts to prevent this granulation, to carry the heating so far that he seriously injures it, as he causes the loss of the aroma and flavor, for these are volatile oils and heat drives them out of the honey. The heating also causes the loss of vitamins, those mysterious somethings which are apparently so very essential to our health and well-being.

Then one can follow up this argument by saying that honey hardened into a solid mass is very edible as soon as one gets over his suspicions that it is not pure honey. This hard honey carries all the good points of fresh, liquid honey, except that it is not a liquid. What of that? Use it like butter. Spread it on bread and biscuits. Use it like real butter, or like peanut butter.

When this point is reached a counter argument is advanced. "But I don't like it, it feels as if I had some sand on my tongue." Now, how are we going to meet that argument? It is real. It is no phantom of the imagination. One cannot pooh-pooh it away.

A few years ago a well-known beekeeper of another State presented me with a jar of candied honey. He told me that he sold most of his honey in that form. Well, if his customers ate it in that form I think that they must have been very indifferent to what they put into their mouths. That honey was granulated very coarsely, with almost nothing between the granules. The grains were so coarse and hard that they dissolved very slowly, so that the flavor and sweetness were almost completely camouflaged. I can frankly say that if that were the only form in which honey were served to me, I should go without eating honey.

It seems quite an obvious thing that, if we are to get the public to eat candied honey, we must serve it to them in a form which is palatable to the average person. There are some people who do not differentiate in such matters, but this is not true of the majority. We must serve the majority. Consider our present day confections. Is there one form of confection more universally popular than the chocolate cream? Unless one dislikes chocolate, there is scarcely a person who does not love a chocolate cream. The reason is simple. The smooth, velvety interior of the chocolate drop melts down upon the tongue in a most satisfying manner. It does not separate into a lot of granules to suggest sand to the tongue, as does coarsely granulated honey.

You see the lesson taught. We must make the candied honey take the consistency of the fondant of the confection. Once let the public into the secret of honey candied to the velvety smoothness of a high-grade chocolate cream, and our campaign is won.

To turn the trick is the next thing. Can we control the candying of our honey? Can we, at will, make it turn out smooth rather than coarsely grained? I wish that I could surely answer yes to this, but fear that some difficulties lie here, which only time and study can possibly remove, if at all. Some honeys will not candy at all, other honeys will candy very quickly; some tend to candy in coarse grains while others take a fine texture when granulation occurs. Two things, however, help greatly in producing a fine grained honey. These two things are density and agitation.

No honey which is extracted while insufficiently ripened will take a good grain when candied. We have herein another sound reason for extracting honey only after it is well ripened. Green honey is one of the worst enemies of the extracted-honey producer. Well ripened honey, if it will candy at all, can readily be made to take a smooth, velvety consistency upon granulation.

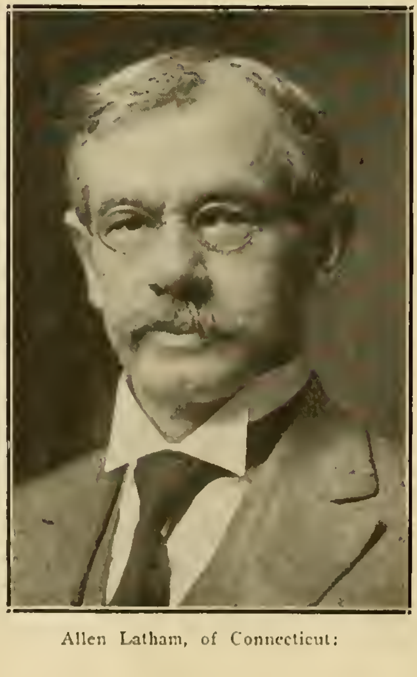
I have for some years sold candied honey as honey butter. I never have made a special matter of selling my honey this way, for the simple reason that some seasons I cannot get my honey to granulate. My main crop is from sumac, and this variety of honey will sometimes not granulate for years. It will get gummy, but will not grain. But if clover yields, and if I get some fall honey, I can blend these three and get an exceedingly fine article. The conditions this past season were favorable, the product being about 40 per cent clover, 50 per cent sumac and 10 per cent goldenrod. I might say here that the goldenrod honey in my locality is the same color as clover honey. Upon the arrival of cold weather a blend of these three honeys can be made to take the form of butter in a few days. Daily agitation is desirable. The honeys are put into a barrel and the contents stirred a little every day. Much stirring is not essential, simply a disturbance of the centers of crystallization.

I wished to make a specialty of my honey butter this winter and prepared about a ton. I filled nearly 2,000 pound cartons of the waxed variety with the butter when it was nearly ready to become hard. My daughter is an artist, and she prepared for me a carton or poster, and some lettered borders for a window display. A photograph of this window display is seen on the front cover of this magazine. Coincident with starting this window display in one of the central grocery stores of Norwich, I put several little advertisements in the morning paper. The day before these advertisements appeared I went about to all the stores which might handle the goods, grocery stores, drug stores, delicatessen stores, etc., and offered to place the honey in the stores at my risk. I placed the honey in about 22 stores.

The sales exceeded expectations. I had to renew the stock in some of the stores early the following week. The sales were not transient, either, but have kept right up. My stock is nearly exhausted. A large number of people have become acquainted with honey in this form, and have fallen in love with it. "Simply delicious," "Mighty good," and similar expressions, are very common. I clearly foresee that another season will bring a great demand for honey in this form.

We all recognize the desirability of disposing of our extracted honey in the candied state. I wish this article to be an entering wedge to lift extracted honey to a higher plane. We must see to it that our product meets the demands of the people of keen tastes, and sensitive palates. Coarse, sandy honey will never become popular, whereas the finely grained product speaks for itself and creates popularity unaided.

Connecticut.



Allen Latham, of Connecticut:

## A TRIP THROUGH SPAIN

Our readers are already acquainted with Mr. Baldensperger. But it is as well to remind them that this eminent apiarist was born in Alsace, lived for a number of years in the United States, then went to Palestine, where he married an American girl and lived for many years. His home is now on the Riviera, at Nice. He has traveled a great deal in Asia and Africa and is herewith giving an account of a trip taken from France, through Spain, to Algeria. Mr. Baldensperger has kept bees in all sorts of ways, in different countries.

Oran, Algeria, March 1, 1921.

Dear Mr. Dadant: I have just crossed over from Spain and have had a look at Spanish beekeeping; I don't mean the few establishments of movable-frame apiaries which are kept in the province of Barcelona and near Madrid; for it was too cold there in February to look in the hives. But I rushed to the South, Cordoba, Sevilla, Granada, Malaga. Granada mostly attracted my attention, its present and its past. The snowy peaks of the Sierra Nevada did not allow the bees to be out, even on the sunny declivities of the pomegranate-split-open town of Granada.

I have great admiration for the Arabs of Spain in the Middle Ages. Their teachings were so thorough that, although four centuries have passed since the expulsion of the last of their kings, the traces of their culture and agriculture are still visible everywhere. Beautiful country and indifferent administration! What fine olive groves and palm plantations, pomegranate orchards and oranges for miles and miles, about Murcia especially, and all with the Arabic canalization work!

Says Chateaubriand: Boabdil, or Abu-Abdallah, was the last of the Moorish kings, and as he was driven out of the city, he could only sigh: "Oh! Granada!" He was compelled to leave it while America was being discovered, in 1492.

As I stepped into the magnificent Lion's Court, with the marble columns, I remarked to the director that the cell-work resembled the combs of bees. When he found that I was interested in bees, he showed me a swarm of bees which has been living in the Royal Palace for ages. No doubt the ancestors of those bees had gathered honey in the marvelous gardens of the Eldorado of the royal families, working on the highly-scented myrtle bushes still kept in the Alhambra, the grandest of all Arab architectural wonders. The bees did not worry about Moors or Spaniards—they went on with their work, preparing for swarming. And perhaps some day they will settle in the palace of Charles V, now wholly ruined, for they care naught for political changes, and they sip the sweets from the blooming almond trees and leave trouble to man.

The eucalyptus plantations seem to have been imported, but the miles of native cactus hedges (**Opuntia vulgaris**) yield a good crop some time in

May. From now till then, the bees will indulge in the rosemary flowers, which abound in all Spain.

The beauty of the Alhambra, the red building where Aisha, the mother of the king, lived, can hardly be appreciated by the present generation. Up in the garden were the apiaries which furnished the exquisite honey of rosemary. Moslems never drink any fermented liquors, but "pure honey, given directly from Allah" to wise people, as the Coran says in its 3rd chapter, was largely used at Court.

The Moorish-Spaniards thought so much of their bees and of their honey, without which they could not imagine a delicate dish, than on their expeditions to the newly-discovered Continent of America, they carried bees along in their caravels. So the ancestors of the bees of the United States and West Indies were brought from Spain, and it was through the ports of Cartagena and Malaga that they were carried through their long journey, by sail. The Moors and Neo-Spaniards must have been great experts, to carry bees with them at a time when neither wire-cloth nor anything equivalent to it was known, to close up the hives.

In Northern Spain, progress is much slower than in the South, on account of the commerce of the latter with sea-faring nations. The old Islamitic or Arabian hives are still in use all through Navarre and the Basque countries. In the South, their colonies are either in jars or in alfa-wicker baskets, set upright, the European fashion. The Moorish, or rather the Oriental fashion, was to keep the hives in horizontal position, 10 inches in height, by about 32 inches in length. I have met with these hives all over Cyprus, Palestine and Egypt, through North Africa and some parts of Spain. This fashion is Islamitic, as the bees were and are considered sacred, and honey was to be taken away only from the end, using a little smoke to drive away the bees, but not destroying them with sulphur, which is the Northern fashion. Although the Spaniards are now Christian, in the sense of keeping Sunday instead of Friday, which is the sacred day of Islam, they have inherited the Moslem respect for apiculture and agriculture in general. The names of many towns and villages, and especially of rivers, are of Arab origin, and they have the flat-roofed houses and cactus hedges around the villages. They draw water from the wells with the Arabian wheel.

The orange gardens along the plain of the Guadamar give plenty of bee-fodder in April, when the trees are white with the strongly scented flowers of the Hesperides trees.

The South Spaniards distinguish two kinds of bees: the smaller ones are commonly called "accarrago billadas"; they are very active and gather pollen and honey much faster than the larger kind; they are perhaps called after an Arab term "El Karagoz," which means "circus player," on account of their quick ways. They have a pretty orange-yellow band on the first ring of the abdomen, but so small is it that it is hardly visible. They are quite aggressive.

I stopped at a village called "Muchemiel," and thought that its name must be derived from the French "Mouche a miel," or "honey fly." They laughed at my suggestion, although their word for honey is "la miel," feminine; while in French it is "le miel," masculine. But I obtained what I wanted; I saw their larger bees, which are of the same size as the Southern French bee, but won't gather honey so fast as the "accaragos." They take honey from them by smoking them with a roll of cloth made of sack or burlap, lighted on the end. In the summer they look for queen-cells, and if they find any, they cut out the part of the comb upon which they hang and insert it in a new hive or "colmena," which is placed on the spot occupied by the old stock. Thus Rodriguez, the owner of the apiary visited, told me he managed his bees, for he had "no time to run after swarms." But he believed that they had a "king" to lead them out at swarming time, but at other times the king reigns in tranquility."

They melt their honey combs by sun heat, and afterwards sell the wax to "wax workers."

Wax is used for purposes which are peculiar to that country. In a church near Alicante is kept the authentic veil with which St. Veronica wiped the face of Christ as he was taken to Calvary. The Church is therefore called "Santa Fax," Holy Face. Ailing people come there to pray for a cure and, when their prayers are granted, they donate to the church a wax representation of the part of limb or of body which has been cured. This is made of pure beeswax; a hand, a limb, a face, etc. So beeswax brings a good price for this purpose, especially as wax candles are also offered at the same time, on account of their sweet odor when burning.

"The bees," said Rodriguez, "are better chemists than men; they gather the remedies for all diseases, in all kinds of flowers and offer them to human beings."

On the feathery palm trees at Elche, how many tons of sweets are gathered, by our good little friends, who wisely bring home the wonderful drug, liked by children and by grown people as well!

I am now gleaning information among the Algerians and may go among Saharian bees. If so, I will let you hear. But I must hurry, for my own bees will soon claim me, north of the blue Mediterranean.

Ph. J. Baldensperger.

## PRONUNCIATION

By Arthur C. Miller

Don't shy. This is a bee article, as you will find out if you will read it, and perchance it may help you.

Once upon a time, there was a good and learned man who was so exercised by the mixture of terms applied to bee culture and the confusion and loss which arose therefrom, that he compiled a dictionary expressly for beekeepers and for those of you who never knew it—and the appearances are that few have seen it and fewer own it, let me call your attention to the Dictionary of Apiculture by Dr. John Phin, and while I am about it, I will append a few additions and comments caused by more recent occurrences.

A dictionary, as you should know, contains not only a list of the words and their meaning, but also their pronunciations; but to prove that most of you don't know, just try to get the rank and file of the boys to pronounce and define "Nuclei." First they will call it nuclee. nucle, nuclay and if they want to refer to a flock of them they herd them by calling them nuclees, nucleusses, and as many more calls as you will find in a flock of blue jays. And you will find many of the boys will pronounce it by saying "a small colony." By the way, what is a colony? Our good English cousins pronounce it a Stock, but we pronounce it all the way from Colony to Nucleus, Swarm, Stock, Hive, Skep, Gum, and if we have been floored by disease we wind up by

The Alhambra, Granada, Spain. There is a swarm of bees at the angle of the building beyond the fountain.

pronouncing it a delusion and a snare. We mix up the container with the contents, just as we did in the old "wet days" when we tried to see the inside of too many containers.

The mixed terms for a bunch of bees is no worse than the mixed dimensions of supplies which the makers blandly pronounce Standard.

And that reminds me of my friend Brown, of Spiral Springs, Ill. Brown pronounces our supplies a jumble, says trying to successfully assemble a lot of supplies from several makers is about as pleasurable as trying to replace broken parts of your Rolls-Royce from junk scraps of a Tin Lizzie. Brown is a chap you should know. He is a real genius as a bee crank. Got more than enthusiastic about bees and plunged into outyards. Used to be seen at all hours toiling from home, laden with all the bee supplies he could stagger under. Pronounced it fun until Mrs. B. began to figure costs, and then became quite dumb and seemed to lose his enthusiasm for lugging things back and forth, so gathered together ten shekels of silver and bought a white horse. The owner pronounced it several ways, a bargain, kind, gentle, a little old but still useful, and sure to stand without hitching. That last was its strong point, or four of them, for not one of its four legs would it budge when it was so inclined or declined; in another word ,it was pronounced "balky." Brown knew that, but he thought he might say something to move him. So after acquiring the aforesaid white horse and not knowing of any red-haired maid to go with it, also being more or less dubious as to how Mrs. Brown would pronounce such an addition to the assembly, he proceeded to lace some hairs of red copper wire into the breeching of the harness for the white horse, doing it secretly and surreptitiously. Also, he connected those red copper wires with the reins of said harness.

From some source, the origin of which it were not wise for us to inquire, Brown acquired a wagon of unknown antiquity, and to this he affixed the white horse, and in a secluded and hidden part of the wagon he put a dry battery and tied it to the red copper hairs. Next he loaded the wagon with the standard supplies, pronounced all complete, bade Mrs. Brown a fond farewell, headed the outfit for the country via the neighborhood of the seller of the white horse and started. After standing longer than he liked, while Brown was doing the loading, the white horse started well, went a little way and paused. Brown pronounced some persuasive words, but the white horse seemed not to know the language. My secret opinion is that Brown's language had been corrupted by contact with bee literature; anyway he pronounced several different things, then pushed on the reins with their red hairs, stepped on the connection to the storage battery, and instantly the white horse went away from there. He shot by his former owner, nearly going over him. What the said former owner pronounced, Brown failed to hear, but the goods were widely and thoroughly distributed over Cook County, Illinois. Brown is still undecided whether to pronounce this trip a success or not, for some of the supplies are still missing and he does not know whether those are the pieces which fitted or not. But from that day on the white horse never failed to go when Brown or anyone else pronounced the right word, and in due time Brown sold him for many times ten shekels of silver, so that Mrs. Brown, after persuading Brown to part with a goodly part of the silver, joined him in pronouncing the White Horse deal a success, though its former owner still pronounces its renovation a mystery.

But when it comes to trying to use together the supplies from different makers, all pronounced "standard," Brown looks all around to see if he is out of hearing before he pronounces anything. One special set of parts which are never the same from two different makers, and seldom the same from the same maker for two successive years, particularly incenses Brown. He pronounces them the greatest curse in all beedom, and the cause of troubles and misfits in more different places than any other bee supply thing he knows, to-wit: the ends of the top bars of frames. Just a little variance in the thickness of these ends will throw the frames too high or too low, upset lower or upper chambers, floors, covers, honey boards, escape boards, temper of all handlers and of many more bees than a hive can hold. Brown is fully justified in pronouncing them—but excuse me, I cannot just repeat Brown's pronunciation, though I can, and do, fully endorse it.

Arab houses and palm trees at Elche, Spain.

I said "honey boards" just above. Say them to Brown and—no, don't, it isn't safe. Last time I did it I was sorry, very sorry.

But between you and me, what is the thing? I am in a hurry just now, so write your answer and hand it to me the next time I meet you.

Brown is a pronounced success when experimenting with bees. Just ask him about packing his bees in the meal trough while the combs were stored safely in the house where moths could not corrupt or honey break through and leak. The white horse had gone then, but I wish I dared tell you the remarks of all concerned when the tax collector hitched his horse to the meal chest one day. Mrs. Brown pronounced it a scream, Brown pronounced it a case for a damage claim for bees destroyed. While the tax collector was too out of breath chasing the horse to pronounce even a part of what he felt.

Brown has a glorified idea of keeping bees in winter without combs, just packing them up in small boxes, a slab of food on top, a handful of meal below and bran all about. At present he pronounces it a dream.

I know another chap, a down east Yankee, who tried a similar scheme and he pronounced the results mixed. Yes, quite, meaning the bees, meal, food, chaff and ideas.

I was about to add another of Brown's pronouncements, but I just heard he is badly stirred at the advanced prices of bee fixings, and think I will wait until another time.

Don't pronounce all this visionary, for you may awake and find a lot of it true; they would not be the first bee visions which came true and confounded the sages.

I have some other pronouncements, but they will keep, and keep the editor happy by keeping, for he likes things short and sweet. He isn't very tall himself.

Rhode Island.

## THE VALUE OF LAVENDER

By Mrs. I. A. R. Fick

Two items, one in the November issue of the American Bee Journal, and the second in the December number, regarding the dual purpose in the cultivation of lavender (**Lavandula vera**), for its commercial value to druggists and distillers of perfumes, and also for its value as a honey producing plant, ought to be of more than passing interest to large and small beekeepers.

When it is stated: "In Italy it is

eminently nectariferous" and in Australia it is estimated "one acre of lavender will enable the bees to store a ton of the finest flavored honey every year," further information seems well worth the seeking.

Lavender thrives best in light and rather dry soils, well supplied with lime, but it may be grown in any light, well drained loam, fully exposed to the sun, and in altitudes from 1,300 up to 6,600 feet above sea level. In favorable climates the leaves are persistent, or nearly so, and in colder regions it requires protection of coarse litter or evergreen boughs. In ideal localities it proves hardy and evergreen, and grows from 2 to 5 feet high.

Specific information obtained from prominent nurserymen and the Bureau of Plant Industry states: The **Lavendula vera** is not easily grown from seeds, but may easily be jropagated from cuttings and, if they are properly cared for, every one should grow.

The plants grow profusely, and when used for oil, the flowers are distilled at once without drying. If the flowers are wanted the tops are dried in the shade and the flowers later stripped off by hand.

On ordinary soil yields of 600 to 1,200 pounds per acre of fresh blooming tips are obtained. The dry weight is about four-fifths of the green weight. Under good conditions the yield of oil varies from 12 to 15 pounds per acre. During the first week in March, 1921, prices quoted in the wholesale market of New York for these products were as follows: Lavender, flowers, ordinary 18 to 24c per pound; select flowers, 21 to 25c per pound. If in addition to this may be placed the value of 1,000 pounds of honey (authority, Von Mueller, in his book, which is published by the Government at Melbourne, Australia," December American Bee Journal, 1920), it will be readily seen the cultivation of lavender serves a double purpose in its usefulness and in its increased honey profit to the beekeeper.

Inquiries sent to the leading drug houses and to distillers of perfume in the North, East, South and Middle West brought replies of great similarity:

"Lavender blossoms sold commercially in this country are imported from Europe, for we find the plants do not bloom as freely here."

"The American lavender is unsuited for perfumery purposes. The French lavender is always used."

"All lavender flowers used for the manufacture of lavender oil are purchased abroad, and not in this country."

"We use only imported lavender flowers in our manufactory operations."

To the question, "Why is lavender imported?"

"Owing to high cost of labor."

"We are inclined to think it cannot be cultivated here to an advantage, because of the cost of production."

"Lavender blossoms and oil are imported into this country. The reason given is that the lower wages and cheaper living costs which obtain in most foreign countries make it possible for them to produce and send their commodities to this country at prices lower than those necessary to yield a reasonable profit to the American producer."

Replies to the question, whether it were worth while to attempt the cultivation of lavender on a commercial scale, revealed the fact that, "There is a considerable demand for lavender flowers." Samples of flowers would be welcomed. If the quality were satisfactory, they would meet with a sale, "but your price must be lower than that of the imported article."

A very great number of firms, both drug and perfume manufacturers, buy from 5 to 10 tons a year.

After all is said, is it worth while? The writer thinks it well worth testing its merits as a honey producer, and also for its blossoms. As the writer has been fortunate enough to procure seeds from abroad, time will tell the conclusion of the story.

The **Lavender officinalis, vera** is the specie producing flowers of superior quality.

New York.

## MISSOURI PROVIDES INSPECTION

I have some good news for beekeepers in Missouri. After years of waiting for State aid, we have finally got a bill through the Legislature and signed by the Governor, which will be a blessing to all beekeepers in the State. Most of the bees in this part and some other parts of the State were completely killed by disease, except bees in the hands of men who knew how to treat it. Not many knew how, either.

A year ago I sent over $1,000 back to customers who had made first payment to book orders for queens. This was done as soon as I found foulbrood was getting too close, as you know a man is not supposed to ship out queens when foulbrood is in the neighborhood. And it was a good thing I quit, because it showed up among my bees last summer and fall; don't know how bad it may be this spring.

The appropriation is only $3,000. The State Board appoints a State Apiarist, he to appoint as many local deputies as needed to do the work. This saves traveling expenses, and will make the money go further than it did under the old law, which provided for only one inspector to do all the work in the State. Here is hoping that we get it cleaned up. When the inspector comes to my house we will give him the best eats and the best bed in the house, for he is a very important animal, to be sure. A. F. Diemer.

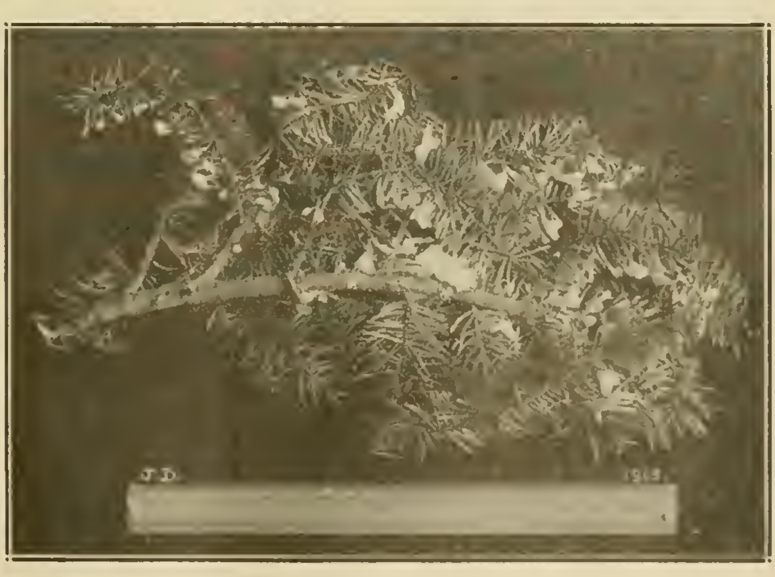
(The appropriation mentioned above is not sufficient. But "half a loaf is better than no bread," and beekeepers may secure all the help they need by and by.—Editor.)

## MORE ABOUT FIR SUGAR

Since the publication of Mr. Lovell's article on fir sugar in our March issue, we have been endeavoring to secure a photograph showing this unusual occurrence. Through the kindness of Mr. John Davidson, Botanist of British Columbia, we are able to reproduce the picture herewith. In response to our letters Mr. Davidson furnishes some further information, as follows:

"I beg to acknowledge receipt of your letter of April 13th, and also a copy of the American Bee Journal containing the article by J. H. Lovell. In it I observe that he mentions that a beekeeper in Victoria speaks of the ground being covered with an exudation, and to me this article would lead one to infer that the Douglas fir sugar has been found in that vicinity. I have no reason to believe that such is the case; on the contrary, it is most unlikely, owing to the climatic conditions.

Samples of Douglas fir with a white incrustation have been forwarded from Victoria to this office by correspondents anxious to know if this was the sugar described in my arti-



An exudation of fir sugar on a branch of Douglas Fir in the dry belt of British Columbia.

cle in the 'Canadian-Field Naturalist.' All specimens received from that locality proved to be resin, which the merest amateur could easily have ascertained.

The distribution of the sugar-bearing trees in British Columbia is limited to certain dry belt areas; and through correspondence I have received from botanists in certain of the West States, I have reason to believe that this Douglas fir sugar is found on trees growing in regions presenting similar ecological conditions to the limited area in British Columbia where sugar-bearing trees are found.

I would strongly discourage applying the term 'honeydew' to this product, as the term is usually applied to the result of the work of insects.

In replying to the query contained in the article 'Do any other species of cone trees exude honey?' I have a recollection that in some districts in Europe this sugar is obtained from young shoots of the Larch; in fact, Melezitose indicates its connection with the Larch. (Meleze-Larch tree. French).

The point of scientific importance which interested me most was the fact that this particular sugar is found in a greater percentage on Douglas fir than any other known plant, so that for commercial supplies it is possible that British Columbia will replace Turkestan and Persia in furnishing melezitose.

From a botanical point of view the account was of interest from the fact that it had not previously been recorded."

John D. Davidson,
Botanist in Charge.

## MARKETING HONEY

By Charles C. Schneider

In regard to the advisability of marketing honey locally, I fully realize it is the paramount issue with the modern beekeeper.

While at no time an extensive beekeeper, I have, however, been in close touch with bees in the past thirty-five years.

When a boy of 16, it was my fortune to be a near neighbor to an old-time beekeeper, Mr. Christopher Fronce, in the suburbs of Erie, Pa. (I do not know that he is still living. The last I heard of him he was situated at Springfield, Pa.) It was often my pleasure to help him in his apiary of from two to three hundred colonies, from which he produced from three to four tons of comb honey, mostly basswood and white clover.

Mr. Fronce was the only beekeeper in that locality, at that time, producing honey in quantity, and invariably sold his entire crop to commission houses. It has often struck me as odd that he did not try to market his honey locally, as he was not more than one mile from the center of the city, having, at that time, a population of about 50,000.

I am sure there are a great many beekeepers located near populous centers, who could work up an extensive trade in nearby towns to an advantage to themselves in the way of greater remuneration for their product, and in this I wish to state my experience in local marketing.

At one time I had an apiary in the South, and as I could not get more than 8 cents for comb honey by shipping it, I concluded to follow the last shipment of 3,200 pounds to Detroit (my home town) and market the shipment locally, and had no difficulty in handing it out at from 15 to 20 cents per pound. I will state, however, that the sections were well cleaned and white. The honey being from Spanish needle and fall asters, was capped from yellow to dark. I did not hear one complaint on color of cappings; also, as might be expected, there was considerable leakage, owing to a shipment of 800 miles, and I did not find it necessary to discount one comb on account of leakage. On the contrary, in numerous cases, it increased sales to more combs, and in some instances whole cases, by the customers getting a taste of the honey, on the spot, from their fingers. True, the grocerymen found all kinds of fault with it, and I did not make any sales to them, but they had the satisfaction of seeing me hand out more honey on the public market in two weeks than most of them possibly sold in their whole career. This set me to the notion that there is more to be made in producing less honey, with less equipment, where a local market is afforded.

Our trade is mostly from the apiary, the past few years, and I feel certain we could dispose of ten tons of honey per year, could we produce so much, without going more than a city block from the apiary. Our apiary is located on the main highway leading from Detroit to Mt. Clemens, and not more than 200 feet from the highway, in full view of all traffic between these two cities, five and one-half miles from Detroit City Hall, and eighteen miles from Mt. Clemens, and we have some very good customers in Mt. Clemens, who invariably stop at our apiary for their winter's supply of honey, although they have neighboring beekeepers at home. To this I would say, "Appearances." Note "Appearance" of view of part of our apiary inclosed, with the "French-German" sitting on a box of "dynamite." Tourists from all parts of the country stop to take a sample of Michigan honey home with them, and they say that appearances induced them to stop. (Forgive me if I am vain enough to believe it). When painting up the apiary and keeping the grass cut, the sale of honey was farthest from my mind. It was prompted by the pride and pleasure I have in bees, and I am more than pleased to find the public in the same frame of mind, and reason tells us that the more wholesome and pleasing an article appears, the more salable it is; it being understood, of course, that all persons passing by know a beehive when they see one. For instance, the city youngsters, whom we frequently hear remark to dad, "Oh, Papa, look at the little dog houses."

There are some who may think it too laborious and costly to paint an apiary every year. This is quite true, and not necessary. It is much better not to paint until it becomes necessary to do so to preserve the hives, as too much paint is nearly as bad as no paint at all. On the other hand, it is quite possible to clean up the hives as bright as new, every season, by washing them down with a good standard washing powder until the time comes when they need painting, and then apply two coats of good grade white lead and oil, using one-fourth turpentine in the first coat.

Michigan.

Apiary of Charles C. Schneider, in Detroit, Michigan.

## SHOULD EVERY FARMER KEEP BEES?

By J. H. Tichenor

Reader, would you hesitate to induce your neighbor to keep cows, lest you damage the dairy industry? Or hogs lest you hinder the pork industry? Or hens, lest you bring the production of the hen to naught?

Co-operation in bees, like cows, will mean greater production, with the minimum cost to producer. It will demand the best, in quality. It will make inspection laws worth while. It will create the habit of honey eating, which, once acquired, is seldom abandoned. It will cure your neighbor of that spraying disease, as he can no longer poison your bees without poisoning his. Where I used to live years ago, farmers were all growing the Wealthy apple. Did it bring down the price? No, but it attracted buyers, created competition. Results: Good prices to the grower at his door. In this world we are, in a measure at least, our brother's keeper, and to defeat his interests is but to defeat our own.

Wisconsin.

### SUPPLIES AGAIN

By J. E. Crane

I have just received the American Bee Journal for April and was much interested in my friend Latham's appeal to the "manufacturers of bee supplies," and Kennith Hawkins' reply, pages 134-135. Mr. Latham has stated the matter fairly, as the average beekeeper will look at it, and I believe Mr. Hawkins shows very conclusively why it is impossible for supply manufacturers to reduce their prices and live. He, too, is right, as some beekeepers will look at it.

I believe he is quite right when he says there is no necessity for snowy white sections or show-case shipping cases. Indeed, I believe the average eastern honey looks quite as well, or even better in brownish sections than in very white ones. Unless the honey is very white the white section makes it look a little off color. As for high prices for sections, we have not felt it much as yet, for we ordered a two years' supply some two years ago, getting a discount for putting in our order early, and also, I believe, another discount for the large number ordered at one time. As for shipping cases, we may save much. In a catalog before me I notice they are quoted with glass, at $87.50 per hundred. We use corrugated shipping cases with corrugated partitions, costing but one-fifth as much. These are quite as good, or even better, and are preferred by dealers here in New England. Here is what one dealer says of it: "We have no words but praise in speaking of it. * * * As you know, we ship this honey over all New England, and wherever it has gone we find the same words of praise for this package, and that it accomplishes all it claims."

Here is what another says of it: "I believe you have an excellent thing in the corrugated shipping case, and hope it will come into general use."

We have used this case for fifteen years, with entire satisfaction. Not only does it carry honey safely and is less expensive, but it can be set up in half the time required to nail up a wooden case. This is not an advertisement. While we have a patent on this case, we are not selling patent rights, and anyone can use them who desires to do so.

In the matter of sections, we can get along without them if we choose. We can take our surplus in shallow frames, cut it out, let it drain, and then put it up in two-ounce cartons, placing four dozen of these in a larger corrugated case. Some beekeepers are already doing this, but I believe it will not suit the average beekeeper as well as another way I will now speak of, and practiced by a friend of mine. He takes all his surplus in shallow frames and cuts it out, all that is nice, and puts it in small fruit jars holding five pounds, with edge of the combs on the bottom of the pail. In selling, he charges so much a pound for the honey and enough more to cover the cost of the pail. He does not pour extracted honey into the pail to fill the interstices, as is done in Texas with chunk honey. He informs me he has had no trouble in shipping it to distant markets, without breakage. He is no slouch of a beekeeper, for his crops of honey will average nearly 10,000 pounds a year. He sells much of it at the door, where he has a large trade, and ships the rest away. Now, by this method he pays nothing for sections, and saves the work of setting them up, cleaning them and weighing each section separately. His method requires no cartons, another saving. If he ships his honey away, 6 of these small pails can be put in a corrugated or fibre shipping case costing not more than 10 or 15 cents; so the entire cost of his surplus honey, aside from the labor, will be but one-half cent a pound. As I have said above , he charges the cost of the pails over to the buyer.

Mr. Latham is very modest in his estimates of beekeepers' supplies, as he does not mention the cost of crates or carriers in which to ship tne fine honey cases, which would add one or two cents more to the cost of each section. And now, Mr. Hawkins, let us see what would be the cost of putting up 10,000 sections of honey with beekeepers' supplies:

| | |
|---|---|
| 10,000 sections | $200.00 |
| Foundation | 100.00 |
| Per cent of loss | 200.00 |
| Cartons | 300.00 |
| Expense of marketing | 100.00 |
| Shipping cases | 400.00 |
| Carriers | $150.00 |
| Labor | 600.00 |
| | $2,050.00 |
| Add to this freight and profits of wholesale and retail dealer | 850.00 |
| Total | $2,900.00 |

Or 29 cents a section. Where does the beekeeper's profit come in?

Vermont.

### MATERIAL FOR GOVERNMENT INVESTIGATION

During the summer the Bee Culture Laboratory of the Bureau of Entomology desires to obtain whatever information is possible regarding the presence of adult diseases of bees in the United States. It is already known that **Nosema apis,** a protozoan parasite found in the alimentary canal of adult bees, is rather widely distributed, but the amount of damage done by the organism is not well known. It is not known whether the mite found by Dr. Jno. Rennie and his associates in the so-called Isle-of-Wight disease is present in the United States. The Bureau will greatly appreciate the assistance of beekeepers who note any abnormal condition of adult bees, if they will mail samples in for examination. In most cases it will probably not be possible to give directions for treatment, since so little is known concerning diseases of adult bees. A report will, however, be made on each sample, telling what has been found in it.

Since there will usually not be time to send to the Bureau for a mailing box, it is suggested that live diseased bees be mailed in a queen mailing cage, or dead bees in a wooden or stout cardboard box. Live bees are desired when possible. Bees sent in glass bottles or tin cans rarely reach the laboratory in fit condition for examination. A letter stating the conditions observed and the amount of disease will be helpful. Address Dr. E. F. Phillips, Bureau of Entomology, Washington, D. C.

## BEEKEEPERS BY THE WAY

Dr. S. B. Fracker.

### The Entomologist of Wisconsin

Dr. S. B. Fracker, State Entomologist of Wisconsin, whose picture is shown herewith, is responsible for the enforcement of the foulbrood laws of his State. Dr. Fracker has under way a very energetic campaign to rid Wisconsin of bee diseases. His plan of operation is spoken of as the area clean-up plan. When work is undertaken in any region it is the purpose to be very thorough and to make sure that every diseased colony receives attention. Dr. Fracker contends that since it is possible to rid a small area of disease in this manner, that it is therefore possible to do the same thing in a larger territory and he hopes to demonstrate that it can be done for an entire State. We certainly wish him success and are pleased to note that the beekeepers of the Badger State seems to be co-operating freely. Ready co-operation on the part of the beekeeper is the first essential to success of any movement in this direction.

## UTILIZING STRONG HONEYS

By L. H. COBB

Several years ago I had my bees gather a big crop of honey from hoarhound along the creek and roadways around her, and while it looked as nice as any honey we had, it was so bitter that we could not eat it at all. It had been stored in the same frames, partially, that contained the last of the main flow honey, and because of this some of it was rather mild in flavor, and this gave us an inspiration. We had eaten some of this mildly flavored honey and it was very much like hoarhound candy in flavor. We sold some of it for cough syrup, and then found that people liked it for a change from the regular clover honey for table use. In fact, we extracted the whole late crop and by adding some clover honey to it had a splendid new honey that was in ready demand.

One year we had a big crop of heartsease honey. While some are prejudiced against this honey, others liked it, but we found that it sold much better if we mixed it with the clover honey. Goldenrod honey is rather strong flavored, also, but not objectionable to us, but probably we get little goldenrod honey not well mixed with other fall flowers. There are many patches of mint plants along the roads in many parts of the country, and where these occur I imagine they will flavor the honey almost as strongly as did the hoarhound I mentioned, although not so objectionably. Yet I am sure mixing the flavored honey, to tone down the rankness, will make it more appreciated by the consumers.

A local honey trade will welcome a change in flavor now and then, and it is well worth while to give it to them if we can.

One year I was short of honey to fill my orders and I sent to Michigan for some raspberry honey, and bought some California honey also, thus providing a change with the honey I would have to secure from outside sources anyway, and my patrons showed their appreciation. One patron who had quit using clover honey for the time, saying that they were getting tired of it, began on the raspberry honey and pronounced it the finest honey they had ever had at their house. A couple of months later they were back on clover honey, but they had enjoyed the change, even though they soon tired of the new honey.

Kansas.

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## A SWARM SACK

Take two pieces of lumber ¾x2 in. by 16 or 18 ft. long; put the flat sides together and nail all but about 5 or 6 feet. Then take a sack (burlap) and in its mouth fit a wire or steel hoop. Fasten this hoop in securely with thread or wire and staple the hoop to the pole by spreading the end where it is not nailed, and nailing to the inside.

To hive a swarm of bees, slip the sack over it and give it a sharp jar. Most of the bees will then be in the sack. Turn the sack inside out in front of the hive and start the bees in a little smoke. Joe R. Sterling.

Mississippi.

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## HONEY PLANTS OF FRANCE

By Cannell

Most of the native honey flora belongs to the labiatæ, cousins of the California sage; lavender of three kinds, thyme, sage, mountain pennyroyal (**Satureja montana**), rosemary, wild marjoram, horehound, mints.

Among plants belonging to other families are two kinds of heather (spring and fall), borage (escaped?) various thistles, absinthe, a kind of goldenrod (**Mula viscosa**), and others. I do not mention introduced trees and plants such as locust, fruit bloom, orange, alfalfa, sainfoin, carnation, clovers (five kinds), and I might say that these last are rare around me.

1. **Lavandula spica** (probably **L. vera**), limestone hills above 2,500 feet. Sometimes cultivated. (From this plant is distilled the oil of lavender from one drop of which, probably, is made the many gallons of lavender extract so well and favorably known to the American barber). The plant blooms in July and August. July 1-10, August 10-20). It yields slowly, but steadily, from 25 to 75 pounds of rich, perfumed golden honey, much prized over here, and selling for about 60 per cent more than white clover (8 to 15 francs at present writing).

2. **Lavandula grandifolia** (or big-leaved) grows on same hills, but at from 1,200 to 2,500 feet, as it blooms later than spica the yield is light, except in wet years. N. B. I never saw this plant.

3. **Lavandula stoechas** grows in sandy soil near coast and seems to prefer a granite residual of colluvial soil devoid of lime. It is usually found with heather, which likes an acid soil. The yield is pretty fair, I believe, but in this region the **L. stoechas** or **maritima**, grows with heather, which spoils the quality. I never heard of this plant being distilled like **L. spica**

4. Thyme (**Thymus serpylium** and another) neither important.

5. Sage (several, not important).

6. Mountain pennyroyal blooms after **L. spica** in same region, and yields heavily some years a honey of good quality somewhat darker than lavender honey (or so reputed); as the pines yield in August a dark honeydew of vegetable origin, the pines may be responsible for the darker color. 7. Rosemary blooms from about October 1 to April 1; a very slow but sure yielder of a very choice honey. The famous Narbonne honey is partly rosemary. I would not care to keep bees in this region if rosemary were not fairly abundant.

8, 9, 10 and 11. Marjoram, horehound and two or three mints; all useful, none exciting.

But the two lavenders (**Stoechas** and **Spica**) and rosemary would be a great addition to any American region where they would grow.

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## MANITOBA BEEKEEPING

By H. W. Sanders

In your April issue you make editorial mention of the possibilities of Manitoba beekeeping as outlined in our reports of the Manitoba Beekeepers' Association last month. The article is worded, however, in such a way that it might be supposed that we have here in Manitoba conditions similar to those described by Mr. West in his article called "Beekeeping in Sunny Alberta," in which, as you say, the winter problem caused by the "Chinook" winds are very serious.

As a matter of fact we hardly ever get a "Chinook" as far east as Manitoba. I have known them in the Western part of Saskatchewan to come along and thaw the snow in winter, but we very seldom have a thaw of any importance here in Manitoba. There is usually plenty of snow, and the best wintering we have seen here has been in specially constructed outdoor bee cellars constructed along the usual lines. I have been wintering my bees in one of these and the temperature has scarcely varied from 43 degrees all winter.

Our problems have been along the lines of those of Minnesota beekeepers—the difficulty of getting bees to full strength in time for the flow, the occasional dry season that gives no crop and that leaves the bees in poor shape for winter, dysentery on account of poor food, and so on.

Personally I am coming to favor a hive consisting of 1½ stories, Langstroth, with a telescopic cover 10 to 12 inches deep and lined with some non-conducting material. This gives us a capacity equal to all demands, and which will contain any amount of stores. It also allows the bees a means to get across the hive in winter (an important matter where they are often in the cellar for six months) and at the same time it employs standard goods, and allows the beekeeper to change his combs around into supers, or to extract them, etc., as methods of swarm control are urgently necessary here in some seasons, and also because our honey will sometimes granulate solid in the comb.

I am pleased to say that we have as yet no disease problem.

There are great possibilities for honey production in the North here, and any amount of market, as Manitoba still imports large quantities of honey.

Manitoba, Canada.

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## RAPE

In the December Journal you say something of free seeds on page 411. Now this Chinese rape must be the same rape that they have in Europe. I have seen large fields of it in the Netherlands. Beekeepers there will move their bees near fields of rape and give sometimes a good rent for a location. The seed is sowed preferably in August on summer fallow in a very fine seedbed, in rows about

3 feet apart. The plants are cultivated like corn and early in the spring cultivated again and laid by as corn. It will bloom before white clover and the seed is pressed as flaxseed and the oil is used for cooking purposes. The oil cake is used for stock food. I do not think it a profitable crop for this country, as the seed is saved by hand.

G. W. Osterhouse.

Idaho.

## A LITTLE EXTENSION WORK

By Alton L. Logan

One beautiful afternoon in August, with the goldenrod and Spanish needle in full bloom, the telephone bell rang and the excited words I heard were: "One of our 'hives' of bees has swarmed out and we don't know what to do."

Arriving at the farm I noticed the farmer and his wife standing at a safe distance watching the swarm, which was clustered on some weeds intermingled with wire. I took an empty hive and a newspaper. I then shook the bees on the newspaper in front of the empty hive, and we watched for the queen, and clipped her wing.

I removed the cover from the empty hive the bees were entering, and it was not long until I discovered the bees returning to the old stand. I opened the parent hive and discovered it was full of honey except a part of two frames, which was filled with sealed brood covered up with a handful of bees. I placed a super of sections with foundation in them on top of the hive-body. By this time nearly all of the bees had returned, so I then released the queen at the entrance and she soon joined her colony once more.

About 10 days after, I returned to this farmer's home and placed another super on this hive-body and later on I took off forty sealed sections filled very nicely. I showed the farmer how to winter his bees. To date he has enough honey for winter, with a hive-body full of stores.

Too many bees have swarmed out and have perished on account of crowded conditions in the hive which can be easily avoided if understood.

# THE EDITOR'S ANSWERS

**When stamp is enclosed, the editor will answer questions by mail. Since we have far more questions than we can print in the space available, several months sometimes elapse before answers appear.**

### Honey and Syrup

Recently my attention was directed to a syrup which was said to have honey in it. Its taste suggested a honey flavor. On inquiry I can find no one who knows whether honey is ever used to flavor any of the table or commercial syrups. Can you enlighten me or direct me to a satisfactory source of answer?

OHIO.

Answer.—Quite a number of dealers in syrups give their products a pretty name, such as mentioned in the American Bee Journal for January, "Honey Gold," or "Red Clover," in order to draw customers to a product which is mainly corn syrup or glucose, made artificially from corn starch. Those dealers add a small per cent of honey, and sometimes a little sugar syrup, in order to improve the flavor. They usually buy strong flavored honey for that purpose, because it is cheaper, and also because it adds to the flavor. Strong honeys like the heather of Europe, are in demand for that purpose.

### Stings for Rheumatism

I have a friend in the Senate who is very anxious to try out the bee-stinging treatment for rheumatism, and you have something on that somewhere. We receive your Bee Journal, but have been unable to find anything in it on the bee-stinging remedy for rheumatism.

NEBRASKA.

Answer.—We have no regular set of instructions for this treatment. The best information which I ever received concerning this treatment was obtained from the late Wm. Stolley, of Grand Island, in your State. He was a large honey producer and quite a physician after Nature. His method was to give one sting of bee on the arm every other day and to increase the dose, after the patient became used to the poison, giving as many as 3 stings daily until relief came.

There is no doubt of the efficacy of bee poison as a cure for some kinds of rheumatism. But when we have to deal with "sciatica," bee poison is not effective. I suffered from this complaint for some years, until, during a visit to Europe, I was advised by a competent doctor to abstain from eating meat. This was in 1913. Since that time, I have consumed less than one-fourth the meat that I used to eat, and have not suffered a single day from "sciatica." If your friend's complaint is of this sort, I would urge that you advise him to try that very simple remedy.

What we eat, what we drink and what we do have everything to do with our health or disease.

### Beekeeping as a Business

1. How many hives would it take to provide a net income of $2,500 to $3,000 per year in an average location such as we have in the farming districts of the middle west, assuming that the apiary is given proper care and prices remain about as they are now?

2. Would one man be able to handle this number with very little help?

3. Do most of the one-man apiaries dispose of their honey to commission men, or sell it locally, or some other way, and which do you think is the most satisfactory way? Is there ever any trouble getting a market?

4. Would you advise working for comb honey, or extracted, or both, and which method requires the most equipment?

5. What would you estimate the least ground necessary for the best arrangement of the number of colonies one man can take care of?

6. Do you think success would be more certain if the outapiary system was used?

OHIO.

Answers.—1. It is impossible to give, in dollars and cents, the approximate amount that a man can make out of bees, just as it would be impossible to tell how much a farmer might expect from a farm, because bees, like farms, depend so very much on location, seasons, prices, etc. In paragraph 715 of "The Hive and Honey Bee," we wrote that at least 50 pounds of honey may be expected from a colony of bees, on the average, every season. Some localities will yield twice that, average, others will probably fall far short. Of course much depends upon the management. Half of that, at least, would go in expenses.

2. One man could hardly expect to net $2,500 out of bees without help.

3. Beekeepers are usually poor salesmen and they often dispose of their honey to wholesalers or to commission men, but it would be much better if they would do some retailing. Yes, there is often trouble getting a market, if one is not a good salesman.

4. Extracted honey is more profitable to me than comb, but it requires a little more capital at the start.

5. You can keep all the bees that should go in one spot on a single town lot of land.

6. If you go into beekeeping largely, you will need outapiaries.

### Commercial Beekeeper

At a school for beekeepers held in Walla Walla, Wash., March 21, there were 75 present, and the Walla Walla (Washington) County Beekeepers' Association was organized. This question was asked, and I said, "I'll ask the editor of the American Bee Journal:" "What is a 'Commercial' Beekeeper?"

WASHINGTON.

Answer.—I believe that a very good man to answer that question is the one who asks it. Mr. York, the former editor of the American Bee Journal. However, I'll try to reply.

A commercial beekeeper is a man who keeps bees for money as well as for pleasure, and who studies the matter so as to get as large returns as possible. We are, none of us, as good commercial beekeepers as we ought to be. In the first place we should keep bees in the most favorable spots. Then we should do what we say should be done, in order to succeed. We should not imitate the old parson who told his parishioners: "Do what I say; don't do what I do." Let us all try to be a little nearer the ideal "commercial beekeeper."

### Clipping Queen's Wings—Crooked Combs

1. Please tell me how to clip a queen's wings.

2. What is the best thing to do with a hive that has crossed combs?

NEBRASKA.

Answers.—I do it as follows: Catch the queen across the thorax with the fingers, then slip the blade of the scissors under one wing and clip about half of its length, or you may clip one-third of each wing. Dr. Miller advises cutting the two wings on one side as short as they can be conveniently be clipped.

2. Transfer the combs, during fruit bloom, to other frames Or, if you don't like the job, put another story on top. By and by, if you use foundation, the queen will move to the upper story. Then put an excluder between. In a few days the brood will all be hatched out of the crooked combs. You can then remove that hive and transfer the combs at leisure. If you wish to hurry matters, you may drive the bees and queen to the upper story, then put on the escape so she may not be able to go down again.

### Bees in the City

I have 64 colonies of bees here that are in the city limits and have no complaint of anyone ever being stung, but I have a neighbor that is trying to have the City Council make me move them out of the city limit

IOWA.

Answer.—If your bees do not sting people the fact that they are kept within a city cannot be made a nuisance. In the case of "Clark versus the City of Arkadelphia, Ark., the Supreme Court held that, "Although bees may become a nuisance in a city, an ordinance which makes the owning , keeping or raising of bees within the city limits a nuisance, whether it is in fact so or not, is too broad. and is not valid." There were other cases decided in the same way.

However, if your bees should sting people, they could recover damages and force you to remove them.

Bees will not fly through a wire mesh 1 inch or less in diameter. So a very safe thing for you to do is to establish a small net fence around your apiary, on the sides next to the street or the neighbor. I have seen this in the City of Peoria, Ill., with very satisfactory results.

A little gift of a comb of honey, to the neighbor who dislikes the bees, donated at the time of harvesting the crop, may smooth down much dissatisfaction or prejudice.

### A Drone Layer

The hive of bees in my apiary that I examined to see if they were short of supplies had 4 or 5 pounds of honey and lots of pollen stored, and they seemed to be working strong. They are Goldens, and have one of the finest-looking queens you ever saw, but there was not a bit of worker brood in the combs, but lots of drone brood in worker cells. This is a young queen, about 8 months old. Now what is the trouble, laying workers, or an infertile queen, or what? MISSOURI.

Answer.—That queen is a drone-layer and absolutely worthless. The sooner you replace her with another, the better it will be for the colony. If the colony is strong, you might save it by killing the queen and giving them at once some brood just hatching from the eggs, in place of their drone brood. If you can give them a good queen it would be still better.

As far is I am able to judge, the queen must have been disabled by chilling. That sometimes makes a fertile queen a drone-layer. However, she may simply be an inferior queen which has already lost her fertility. Such accidents happen more readily among the Goldens than among the others, because of their being too much in-bred.

### Transferring

I have a colony of bees in a box hive and would like to transfer it. I have a 10-frame Jumbo depth dovetailed hive with five frames of drawn comb and the rest with full sheets of foundation. I have had no experience, and would like to know the easiest way to transfer to this hive. IOWA.

Answer.—When the colony becomes strong enough, which ought to be in May or June, turn the box hive bottom side up, and fit the other hive, right side up, on top of it, without its bottom board, using such slats or short boards as may be needed to close any too wide openings to the outside. In short, fix your hives so that the bees can go from one to the other, and also so they can go back and forth to the field.

The queen will go up into the movable-frame hive as soon as she is crowded for room below. If she does not move soon enough to suit you, you may drive her up by using a little smoke and drumming the bees for a few minutes. After the queen has been in the upper hive 21 days, the brood will all be hatched out below. You may then remove that lower story and use it as you see fit.

You can also put the lower story, or box hive, on top of the frames of the other hive, but the queen will probably be slower in going down to it than she would be in going up. The same precautions are necessary in either case, to close up any openings that would give too much exposure of the combs.

### Goldens

Are the Golden Italians as good honey gatherers and general-purpose bees as the three-banded? Also, what was their origin? OHIO.

Golden Italians are not a special variety of the Italian race, although there are occasionally in Italy bees of a slightly lighter shade than the average. The bees which may be seen in Italy, from one end of the country to the other, have three yellow rings on the abdomen next to the thorax. These rings being more or less transparent, the color of the honey within their abdomen has some influence upon their yellow appearance. In ordinary conditions, the yellow resembles more a fair leather color. Their temper is mild and they hang quietly upon the combs when properly handled, while the common bees cluster under the combs and often fall to the ground in spite of the care taken. This is the pure race of Italian bees.

By selecting yellow queens from the yellowest bees, beekeepers, especially in America, have succeeded in producing an artificially made variety of "golden bees." Their color is brighter and the rings of the abdomen have nearly all more or less of the transparency of the three rings common to all the bees of their race. Usually the "goldens" are as quiet on the combs as the ordinary Italians and as peaceable in temper, but they are often less prolific, because of having been selected *for color* at the expense of other qualities.

Some "goldens" have been bred through a mixture with Cyprian bees. The Cyprians are of brighter hue than the Italians, having a golden shield upon the tip of the thorax. They are really "copper-colored." It has often been remarked that their color is well matched with the name of their native island, Cyprus, the name of which is derived from, or similar to, the Latin word "cuprum" (copper). The Cyprians are very active, very cross, and almost impossible to subdue. The Golden Italian bees which have been produced by the mating of Italian mothers with Cyprian drones retain to a certain extent the activity and irritable disposition of the Cyprians. So when we meet golden Italian bees which are of irascible temper, we usually suspect them of having inherited those traits, at some time or other, from the Cyprian ancestors.

Thus it is impossible to say whether the goldens are as good honey gatherers as the ordinary pure Italian bees. Much depends upon their descent. Personally, I have no desire to breed from golden Italian bees. At least, the question of color is a very secondary question, in my mind. The qualities we should seek in our bees are: honey-gathering qualities, prolificness, gentleness, with color as an adjunct which may be pleasant to have, but not in any way indispensable.

## ODDS AND ENDS

### Can the Mite Be Killed?

A. J. Ridley, in British Bee Journal, suggests that if the newly-discovered mite which is called **Tarsonemus Woodi,** is shown to be actually the cause of Isle of Wight disease, it might be killed by smoking the bees with sulphur smoke, and says: "To my mind it may be a question of deciding how little will kill the mites without harming the bees."

### Wintered Without Loss

My bees, 32 colonies—have wintered without loss. They are working fine on fruit bloom and dandelion. I have never seen clover look more promising at this time of year than it does now. Surely the indications are for a good honey crop.

B. A. Manley.

Milo, Iowa, April 21.

### Ellis County Beekeepers Meet

The Beekeepers' Association of Ellis County, Texas, held their annual field meet April 8, at the home of T. W. Burleson, in Waxahachie. In spite of very inclement weather, the meeting was well attended. One of the main features of all field meets is the picnic dinner, and those present certainly thank Mrs. Burleson for the wonderful "eats" placed before them. The work of the afternoon was of a character that is seldom found at beekeepers' gatherings. A regular school of instruction was held. Several box hives were transferred to movable-frame hives and the full process of shipping pound packages and the building of colonies from pound packages was gone through with. Every one present was highly delighted with the methods that were used by Mr. Burleson and it is needless to say that everyone learned much of value. Visitors were present from both Dallas and Johnson Counties. The Ellis County Beekeepers' Association is one of the best in the State and has been extremely active in the work of encouraging better beekeeping in North Central and Eastern Texas.

### Guadalupe Valley Field Meet

Five of the prominent beekeeping counties of Texas, located along the valley of the Guadalupe River, have been united in the Guadalupe Valley Beekeepers' Association for a number of years. Their annual picnic was held April 13 on the Guadalupe River near Seguin, over fifty beekeepers were present and quite an elaborate program was carried out.

After a bountiful picnic dinner, the beekeepers were addressed by Mr. Louis H. Scholl, editor of the Beekeepers' Item. Mr. LeStourgeon, of the Texas Honey Producers' , then told of the correct packing of honey, emphasizing the fact the beekeepers must develop their local trade to a far greater extent than ever before.

H. B. Parks, Secretary of the American Honey Producers' League, spoke on the relationship between the nectar-yielding plants of the San Antonio district and the problems of beekeeping.

Miss Alma Hasselbauer, Secretary of the Texas Honey Producers' Association, spoke of the work of associations as a help to the beekeeper.

Mr. Alex, of the Texas Experiment Station, told of the work of the State

Queen Rearing Yard and explained the new policy of the foulbrood inspection.

The Guadalupe Valley Association has held regular meetings for five years and has been one of the foremost associations in making displays at County and District Fairs.

### League Notes

The announcement that the League will have a trade mark or seal has met with approval of a large number of the prominent honey producers of the United States and many suggestions are being received relative to the design. Mr. C. W. Aeppler, of Oconomowoc, Wis., who has had experience in the designing and registering of trade marks, has offered his services to the League in designing a trade mark. Mr. Aeppler desires, if beekeepers have ideas which they consider worthy of consideration, that they will communicate the suggestions either to the Secretary of the League or to himself. Mr. Aeppler is well qualified to do this work as, in addition to being a designer and teacher, he operates a large apiary.

Dr. E. F. Phillips, Chairman of the Bureau of Research, has named Dr. J. H. Merrill, of Manhattan, Kans., and Prof. H. F. Wilson, of Madison, Wis., as his committeemen. Dr. Phillips is to be congratulated on his choice of associates, as the beekeeping public has come to recognize Dr. Merrill and Prof. Wilson as being foremost among those engaged in the investigation of apiary problems.

Clifford Muth has named the following as his committeemen: A. L. Boyden, Medina, Ohio; Wesley Foster, Boulder, Colo.; C. H. W. Weber, Cincinnati, Ohio, and Ernest Kohn, Grover Hill, Ohio. Mr. Muth has selected these gentlemen, as in each case the man named is not only a large beekeeper, but also is engaged in the selling of honey and of bee fixtures; so knows both sides of the game. They bring to the Committee the strength of years of experience in advertising, and should give the beekeepers of America the very best service which can be rendered.

Reports coming to the Secretary show that the money pledged for advertising purposes at the Indianapolis meeting is now largely available. In cases where the money had to be collected by the Secretary of the State Association, the money has largely been collected and considerable of it has been turned in. The appeal made through the Bulletin for individual beekeepers to tax themselves has met with approval of many of our large beekeepers and the Secretary has received quite a number of contributions from this source.

The League movement is gaining headway in almost every section of the country and the Secretary has been informed by H. A. Scullen, of the Oregon State Beekeepers' Association, that that Association has taken definite steps to join the League.

Again the Legal Aid Bureau and the officers of the League have been called upon to assist the beekeepers in obtaining justice in legislation. Pennsylvania is attempting to pass a law, which will necessitate the inspection of new bee fixtures before they can be delivered into that State. This provision seems foolish to the beekeepers, and a very vigorous protest is being made against the passage of this portion of the bill.

H. B. Parks, Secretary.

### Introducing Virgins

I have read, in February Journal, by Allan Latham, "A System One Hundred Per Cent Successful." Like most good things, it takes care and patience. I practice making swarms, small, about one pound. I buy package bees in the South and some I shake, from home colonies, onto two combs, with a little brood, if I can furnish it, but very often none; I give them a virgin queen, also from the South, by hanging the cage between the combs, candy end down (directions with cage), only I put the queen in first. Some writer has said that "It is possible to introduce a virgin, but not practical. I am getting some vigorous bees by thus crossing pure bred virgins with hybrids.

L. H. Snyder, Altoona, Pa.

### A Note From California

We have had a short rainfall in this section of California, while north they have had an abundance. Recently we have had an unusual killing frost, which will cause the shortest fruit crop that we have had for years. In many places the bees are using stores much faster than they are coming in, except among the orange blossoms. It is now too late to expect any more heavy rains, but without hot east winds to take the surface moisture, we expect some honey. Southern California will produce a short crop this season, unless conditions change.

M. H. Mendleson, Ventura Calif.

### Do It in Time

The beekeeping axiom is "Learn what is to be done, and do it in time." The importance of the last five words cannot be overestimated.

### Ontario to Rear Queens

The recent Legislature gave us a grant of $4,000 for the establishing of a queen-rearing apiary in Ontario and we expect an annual grant of $2,000 for maintenance. This should enable us to establish an apiary in the southern part of the Province with two objects in view; the supplying of pedigreed and resistant stock. While it would undoubtedly take us a few years to achieve our first object of sending out a very much improved stock of queens, we hope to be able to make a continual improvement along these lines. European foulbrood is still very prevalent in parts of the Province, and by sending out goodly numbers of resistant stock, we should be able to overcome this disease to a large extent.

Our Annual Summer Short Course in beekeeping runs from June 13 to 17, and we hope to have with us at that time Prof. Rea, of Cornell, and Prof. Kindig of Michigan. This course is largely practical and free to those desiring to gain experience in beekeeping.

F. Eric Millen,,
Provincial Apiarist.

### Sugar Statistics

The annual report of the American Sugar Refining Company for the year 1920 is out. Its President, in his message to stockholders gives a very thorough and comprehensive explanation for the extreme fluctuation in sugar prices during 1920.

During governmental control of sugar, prices remained fairly constant. France was the first to decontrol sugar, and the result was a mad scramble on the part of French interests to get all the sugar possible. This, coupled with the fact that our government refused to make arrangements for buying the sugar crop, made a steady outflow of sugar from here to Europe.

Then, suddenly, without warning, control was abandoned in the United States. Sugar was scarce and a still wilder scramble ensued. Naturally sugar began to be diverted from Europe back to this country, some sugar exported being returned on the same ship, to take advantage of our higher prices.

There could be but one result. The influx of sugar was so great from everywhere (some even coming from the interior of China) that a break in the prices was inevitable.

During the year, the extreme variation in prices was 19½ cents, a much higher variation than ever experienced in the history of the United States.

The report is very interesting and, we believe, can be obtained by addressing a postal to the American Sugar Refining Company at 117 Wall street, New York City.

### The Queen, According to Butler

If by her voice she bid them go, they swarm; if being abroad she dislike the weather or lighting place, they quickly return home again. While she cheereth them to battle they fight; while she is well they are cheerful about their work; if she droop and die they will never again enjoy their home, but either languish till they be dead too, or yielding to the robbers, fly away with them.—Chas. Butler. The Feminine Monarchie. 1623.-

### The Mid-West Horticultural Show

The Iowa Legislature, in its closing day, provided an appropriation of $16,000 for the Mid-West Horticultural Show for the coming two years. While this show is held in Iowa, it is open to exhibitors of the whole middle west, and attracts exhibits from Wisconsin to Arkansas, and from Colorado to Ohio. Beekeeping is made a special feature of this exposition, and we hope that the exhibits of apiary products at the next show will be more nearly equal to those presented by the fruit and vegetable growers. When the time and place of holding the next exhibition is announced, we will endeavor to give the information place in our columns. A splendid opportunity will be open to the beekeepers to advertise their products to the thousands of visitors who will attend and at the same time secure the premiums offered by the management. Secretary Herrick writes that they hope to increase the amount of premiums offered on honey exhibits.

### Census Reports

Nevada has 11,998 colonies of bees, as compared to 8,401 colonies in 1909. The honey crop for 1919 was 577,576 pounds, or a per colony production of 50 pounds.

Utah has now 25,061 colonies and their production in 1919 was 1,232,239 pounds, of 50 pounds per colony.

Masachusetts had 7464 colonies in 1909 and only 6573 now. The per colony production is 10 pounds.

No honey item is included in the Alaska census report. Evidently there are no bees there, although we have subscribers there.

Kansas had 81,337 colonies of bees in 1920, as against 73,737 in 1909. The per colony production in 1919 was a little over 7 pounds, or a total of 597,875 pounds.

### "Eat Mississippi Honey" Week

The beekeepers of Mississippi inaugurated a special campaign, "Eat Mississippi Honey," which extended over the week April 10 to 16: The object, of course, was to interest the public in honey in general, and Mississippi honey in particular. All hotels, cafes, drug stores, merchants and especially the buying public, were appealed to to help make the movement a real success. Judging from some newspaper clippings coming to this office, much desirable publicity through the press was given to the project.

### Beeswax Refuse Now Third Class

The Consolidated Classifications Committee of the railroads has acted favorably on the change of rate in "Beeswax refuse" from first to third class in the Southern classification, making a uniform rate of third class throughout the country. Refined beeswax takes first-class rates. Anyone shipping slumgum, refuse, etc., should make sure that it is billed out as "Beeswax Refuse."

### Wisconsin Averages 28 Pounds

According to the census, Wisconsin bees averaged 28 pounds of surplus honey per colony in 1919. There are 107,646 colonies of bees in Wisconsin, as against 95,638 colonies in 1909. The honey crop for 1919 was 2,676,683 pounds.

### A Tribute to McCray

The report of the Montana Board of Entomology, recently issued contains a fine tribute to the memory of Dr. A. H. McCray, who died of spotted fever June 14, 1919. Doctor McCray will be remembered by the beekeepers for his work on bee diseases. After leaving the Department of Agriculture he went to Montana, where he was engaged in investigation of spotted fever, a disease which is not yet fully understood. It was while attempting to learn something concerning the disease that he was stricken. His passing was mentioned in our August, 1919, issue.

Accompanying the article above mentioned is a photo of Doctor McCray and extracts from the funeral oration.

### North Dakota Bee Census

Bees are scarce in North Dakota, according to the census. There are now 708 colonies, as against 495 in 1910. The honey production for 1919 was 12,514 pounds.

### Oregon Again

The beekeepers of Clackamas County, Oregon, at a recent meeting formed the Clackamas County Beekeepers Association, with the following officers:

President—W. T. Lee, Canby.

Vice President—George Dennison, Oregon City.

Secretary—J. Sickler, Milwaukie, Ore.

Treasurer—Mrs. E. McFarren, Walluga.

The beekeepers of Multnomah County, at a recent meeting, organized with the following officers:

President—E. J. Ladd, Portland.

Vice President—E. H. Bauer, Portland.

Secretary-Treasurer — Edgar W. Stahl, Portland.

### Another New One

The beekeepers of Glenn County, California, met at Orland March 18 and organized the Glenn County Beekeepers' Association. Officers elected were:

President—M. A. Sayler.

Vice President— A. Eferlein.

Secretary-Treasurer—H. M. Gillas.

Directors—H. H. Hill and E. M. Cripe.

### Lehigh Valley Beekeepers Organize

The beekeepers of the Lehigh Valley have recently organized an association with an initial membership of 34. The officers are: A. L. Brodhead, President; J. E. Linde, Vice President, and O. H. Urffer, Secretary.

### New Jersey Bees

There were 12,451 colonies of bees in New Jersey in 1919, as compared with 10,484 colonies in 1909. The honey crop for 1919 was 157,717 pounds.

### Bees in West Virginia

West Virginia reports 89,873 colonies of bees in 1919, as against 110,673 colonies in 1909. The honey crop for 1919 was 919,689 pounds, or about 10 pounds per colony. It will be noted that there has been a big decline in the number of bees in ten years.

## LESSONS FROM THE HIVE

By B. Romain

Division of Labor—A hive is like a gigantic factory, where every one of its 50,000 workers is at work according to its capacity—using its talents for the benefit of the community. There are carriers, soldiers, sentinels, detectives, nurses, architects, scouts, scavengers. Even youngsters are turned into use for home duties.

Our modern manufacturers have copied the bees in allotting each man a part of the work, in which they can attain such a wonderful speed and accuracy.

Economy—Bees in the midst of their stores never use more than needed; no wasteful banquets, no squandering, no scattering. Their New Year's day, that is their swarming day, seems to be the only exception. Then permission is granted to give full scope to their digestive powers. Yet, that liberality is turned to good account, for the production of the material needed for the new home.

We can only mention the bees' love of order, cleanliness, patriotism, harmony, entente cordiale, their spirit of democracy, from the queen mother down to the last new-born babe.

Bees make their nectar from the sweetest juice of flowers, and that little theft they repay by an immense good in helping their fructification.

Bees go out only to work and come back as soon as possible. They never loiter out of doors. Community life is essential to their existence. What a precious example of family life, which parents and children should enjoy at home for the benefit of all.

The bees have more honey than venom, so our general disposition should be mildness, with occasionally a point of pungency.

To recapitulate, we should learn from bees:

1—To use our time well, not only for our profit, but for others.

2—To save money and economize food—for future needs, so great in war time.

3—To lay up for ourselves, while on earth, treasures of good deeds which we will enjoy for life everlasting—that we call to make investments for eternity.

In ending, may I suggest that St. John the Baptist be honored as Patron of beekeepers (feast 24th of June)? He who was depending mostly on honey—found in trees or in rocks. The non-Christian may take Samson, the inventor of frame hive (from the lion's ribs).

China.

## FROM THE OLD FILES

"I don kno ov enny bissiness on the breast of man so lazy and useless without actually killing him, az huntin' wild bees in the wilderness."—J. Billings. (American Bee Journal, November, 1871, page 119.)

"Where did Noah preserve the bees during the flood? In the archives."—(American Bee Journal, 1872.)

# CLASSIFIED DEPARTMENT.

Advertisements in this department will be inserted for 6 cents per word, with no discounts. No classified advertisements accepted for less than 35 cents. Count each initial or number as one word.

Copy for this department must reach us not later than the 20th of the month preceding date of issue. If intended for classified department it should be so stated when advertisement is sent.

## SWEET CLOVER SEED

SWEET CLOVER—Biennial yellow; ideal for bee pasturage and soil improvement. New seed, recleaned and graded, unhulled 8c per pound. R. M. Hanna, Skillman, N. J.

FREE SAMPLE (Hubam) annual sweet clover (scarified). Genuine Hughes strain, 2c postage.
Jas. H. Kitchen,
R 5, Springfield, O.

## BEES AND QUEENS

QUEENS ON APPROVAL—Bees by package or colony. Tested queen, $2; select untested, $1.50; all other grades, $1. Bees without queen, 1 lb., $3; 2 lbs., $5; colony, $10.
Birdie M. Hartle,
924 Pleasant St., Reynoldsville, Pa.

QUEENS—Italian, 1 untested, $1.50; 6, $8. See my ad on page 247 of this issue.
Willard A. Friend, Bedford, Ohio.

FOR SALE — Three-banded Italian queens untested, $1.60 each; 6, $7.60; 12, $14. Select untested, $1.75 each; satisfaction guaranteed.
W. T. Perdue & Sons,
R. No. 1, Fort Deposit, Ala.

JUST to let all my customers know I am still breeding 3-banded bees, Dr. Miller stock queens: 1 untested queen, $2, 6 for $11. Selects 25c each higher.
Curd Walker, Jellico, Tenn.

QUEENS—H. Brenner strain, 3-banded Italian. Equaled only by the best. Untested, $1.50 each, $15 per dozen.
Dr. A. Wright, Kingsbury, Texas.

FOR SALE—Three-banded Italian queens, after May 25, untested, $1.50 each, 6, $8, 12, $15. Tested queens, $3 each. The above queens are all select.
Robt. B. Spicer,
Wharton, N. J.

MY famous three-banded Italian queens, $1.50 each, 6 for $8, after June 1.
J. W. Romberger, Apiarist,
3113 Locust St., St. Joseph, Mo.

QUEENS ON APPROVAL—Bees by package or colony. Tested queens, $2; select untested, $1.50. All other grades $1. Bees without queen, 1 pound, $3; 2 pounds, $5; colony, $10.
A. M. Applegate,
840 Main St., Reynoldsville, Pa.

QUEENS from real producers, three-banded Italians: 1, $1.50; 6, $8.25; 12, $16.
Trinity Valley Honey Co.,
Route 8, Dallas, Texas.

SIMMONS QUEENS, bees and nuclei, goldens and three-band.
Fairmount Apiary, Livingston, N. Y.

ITALIAN QUEENS—Three-banded, select untested, guaranteed. Queen and drone mothers are chosen from colonies noted for honey production, hardiness, prolificness, gentleness, and perfect markings. Price, May and June: $1.60 each, 12 or more $1.25 each. Send for circular.
J. H. Haughey & Co., Berrien Springs, Mich.

FOR SALE—Three-banded Italian queens ready June 1. Day old virgins, 66c each. Select untested, $1.60 each; 6, $8; 12, $16; 50, $60. Nuclei with queens, 2-frame $7.50; 3-frame $10.50. No disease; satisfaction guaranteed and correspondence answered promptly.
A. E. Crandall, Berlin, Conn.

MR. BEEKEEPER—If you enjoy preparing supers and removing honey, then you will be wise to head your colonies with my vigorous Italians. See larger add elsewhere.
Herman McConnell, Robinson, Ill.

HARDY ITALIAN QUEENS, $1 each.
W. G. Lauver, Middletown, Pa.

FOR SALE—Unsurpassed Italian queens, ready June 1; untested, $1.50; 6, $7.50; 12, $14; 50, $55; 100, $105. Tested, 1, $2.50; 6, $13.50. My queens are actually laying before they are sent out.
J. D. Harrah, Freewater, Oregon.

FOR SALE—Hardy northern bred Italian queens and bees, each and every queen warranted satisfactory. For prices and further information write for circular.
H. G. Quirin, Bellevue, Ohio.

THAGARD'S ITALIAN QUEENS—My 3-banded are "bred for quality"; try them and be convinced. Circular free.
V. R. Thagard, Greenville, Ala.

GUARANTEED ITALIAN QUEENS AND BEES. Orders filled day received. See larger add elsewhere.
Dr. White Bee Co.,
P. O. Box 71, Sandia, Texas.

HEAVY LAYING Italian queens that produce hustling 3-banded workers. Untested, $1.25; tested, $2. Safe delivery and satisfaction guaranteed. There is no disease in my apiaries. Order now and get them on time.
P. M. Williams, Ft. Deposit, Ala

BEES AND QUEENS from my Carolina apiaries, progeny of my famous Porto Rican pedigreed breeding stock.
Elton Warner, Asheville, N. C.

FOR SALE—Golden or 3-banded virgins, 60c each, or $6 per dozen; safe arrival.
R. O. Cox, Rt. 4, Luverne, Ala.

SWARTS' Golden queens produce golden bees of the highest quality. Untested $1.60 each, 6 for $8; tested, $3. Satisfaction guaranteed.
D. L. Swarts, Lancaster, Ohio, Rt. 2.

FOR SALE—Golden Italian queens, untested, $1.50 each, dozen $14. Bees by the pound a specialty. Write for prices on bees.
E. A. Simmons, Greenville, Ala.

FOR SALE—Queens and bees, Italians and goldens, $1.50 each, $15 per dozen; 1 lb. bees, $5, 2 lbs. bees, $9. If queen is wanted with bees add the price of queen. Safe arrival and satisfaction guaranteed in United States or Canada. Cash or certified check must accompany all orders where parties are not known or satisfactorily rated.
Graydon Bros., Rt. 4, Greenville. Ala.

FOR SALE—Leather colored Italian queens, tested, until June 1, $2.50; after, $2. Untested, $1.25; 12, $13. Root's goods at Root's prices.
A. W. Yates,
15 Chapman St., Hartford, Conn.

THREE-BANDED ITALIANS only, that have been bred to a high standard of excellence. I never had any disease in my apiary. Safe arrival and satisfaction guaranteed. Untested queens: 1, $1.50; 12, $15. Tested queens: 1, $2.25; 12, $25.
Jul Buegeler, New Ulm, Texas.

FOR SALE—Root's strain of golden and leather-colored Italian queens; bees by the pound and nuclei. Untested queens, $1.50 each; select untested, $2 each; tested, $2.50 each; select tested, $3 each. For larger lots write. Circular free.
A. J. Pinard,
440 N. 6th St., San Jose, Calif.

THREE-BAND BREEDERS from one of the heaviest honey-gathering strains in the State. $10 each. Delivery May 15.
A. V. Small, Augusta, Kans.

WE are booking orders for our golden Italian queens for spring delivery after April 15. Untested queens, 1, $1.60; doz., $16; select untested queens, 1, $1.75; doz., $18; virgin queens. 1, 75c; doz., $9; tested queens, 1, $3; doz., $36 Safe arrival guaranteed.
Tillery Brothers, Georgiana, Ala.

BOOK YOUR ORDERS for QUEENS now—Goldens, $2; tested, $3; banded, $1.60; tested. $2.60; six or more, 10 per cent less.
Clover Leaf Apiaries, Wahoo, Neb.

EDSON APIARIES now booking orders for queen bees for delivery during season of 1921. Prices: One untested queen, $1.25; 50 untested queens, $57.50; 100 untested queens, $100. Orders filled in rotation; first shipments March 1, 1921.
Edson Apiaries, Gridley, Calif.

BEES AND QUEENS from my New Jersey apiary
J. H. M. Cook,
1Atf 84 Cortland St., New York City.

HIGH GRADE ITALIAN QUEENS—Send for catalog.
Jay Smith, R. 3, Vincennes, Ind.

BEES BY THE POUND, ALSO QUEENS—Booking orders now. Free circular gives prices, etc. See larger ad elsewhere.
Nueces County Apiaries, Calallen, Texas,
E. B. Ault, Prop.

GOLDEN and 3-banded Italian queens; tested, $1.25; untested, $1. No disease. Safe delivery and satisfaction guaranteed.
C. B. Bankston, Buffalo, Texas, Box 65.

FOR SALE—Golden Italian queens, tested queen, $3; untested queen, $1.50.
J. F. Michael, Winchester, Ind.

HUMMER QUEENS—Untested, $1.50 each, $15 per doz.; Tested, $2 each, $22 per doz. A trial will convince you that they cannot be beaten. Safe arrival and satisfaction guaranteed. Nuclei at same old price.
Geo. A. Hummer & Sons, Prairie Point, Miss.

WILL SHIP a few choice queens with frames of brood, $4 each.
Jes Dalton,
Bordelonville, La.

PRITCHARD QUEENS—(Three-banded Italians). My first season selling direct to the trade. June prices: Untested, $1.75 each, 6 for $9.50; select untested $2 each, 6 for $11. For delivery after June 30, deduct 25 cents for each queen. A liberal discount will be given on larger quantities. I will have a few choice virgins, tested, and breeders to spare. Write for prices. Queens clipped free of charge on request. Acknowledgment and directions for introducing sent on receipt of order. Safe delivery and satisfaction guaranteed. Specify date of shipment desired. Otherwise orders will be filled in rotation.
Arlie Pritchard, Medina, Ohio.

FOR SALE—Golden or 3-banded queens, untested only. Safe arrival and satisfaction guaranteed. Prices till July 15: One, $1.50; six, $8; dozen, $15.
Ross B. Scott, La Grange, Ind.

ITALIAN QUEENS, $1 each, or $10 per doz. after June 1. Will book a few more three-frame nuclei of black or hybred bees with Italian queen, for delivery after June 15, at $5.50 each. These will be fine to winter for early spring work.
Otto Diestel, Elza, Ga.

DAY-OLD ITALIAN QUEENS—High quality, low prices. Safe introduction described in circular. Delivery and satisfaction guaranteed in U. S. and Canada. Price, 1, 50c; 100, $50. Order early.
James McKee, Riverside, Calif.

SELECT QUEENS only. Three-band and leather colored Italians. Tested, $2.50; untested, $1.50 each.
Geo. W. Coltrin & Son, Mathis, Texas.

BEGINNING June 5, I can supply you with 3-banded Italian queens by return mail. Select untested, $1.50 each, or $15 per dozen. Tested, $2.50 each. I also have nuclei for immediate shipment; 2-frame nucleus, $5; 3-frame nucleus, $6.50. Add price of queen wanted to price of nucleus.
Frank Bornhoffer,
Rt. 17, Mt. Washington, Ohio.

NUCLEI—2-frame hybrids with queen, $5.50.
Clarence Foote, Delanson, N. Y.

FOR SALE—Nuclei and queens, leather-colored, heavy producers. Nuclei, 2-frame, $5; 3-frame, $7. Queens, untested, $1.50; tested, $2. Single story hives, flat crates of 5 at $16.
R. Kramske, 1104 Victor, St. Louis, Mo.

QUEENS—Good Italian stock, selected and reared with utmost care, especially for requeening. Foresee your needs and receive particular attention. Each, $1.50; 5, $7; 10, $13. Satisfaction guaranteed.
Elsa J. Fischhaber, 1320 Genesee Ave.,
Saginaw, Mich.

FOR SALE—Select untested queens, $2 each, 6 for $11. No very large orders solicited. Ready about June 10.
Dr. C. E. Sheldon,
Coeur d'Alene, Idaho.

CALIFORNIA ITALIAN QUEENS at special prices. After June 15 and to October 1, 1, $1.25; 6, $7; 12, $13; 25 ond over, $1 each; 100, $90. See larger ad elsewhere. Circular free.
J. E. Wing, 155 Schiele Ave., San Jose, Cal.

NUCLEI—We make a specialty of shipping 2-frame nuclei. Write for special prices for June delivery. Queens at the following prices: Untested, $1.50 each; 6, $8; 12, $15; 50, $60; 100, $100. Tested queens, $2.50 each.
Cotton Belt Apiaries, Roxton, Texas.

FOR SALE—Fine tested queens, year old, $2; Silver Spangled Hamburg chickens and eggs; rare old violin.
Elias Fox, Union Center, Wis.

THE ITALIAN QUEENS OF WINDMERE are superior three-banded stock. Untested, $1.50 each, 6 for $8; tested $2.50 each; select tested, $3. Prof. W. A. Matheny,
Ohio University, Athens, Ohio.

LARGE, HARDY, PROLIFIC QUEENS—Three-band Italians and goldens, pure mating and safe arrival guaranteed. We ship only queens that are top notchers in size, prolificness and color. After June 1, untested queens $1.50 each, 6 for $8, 12 or more $1.40 each, 25 or more $1.25 each. Tested queens $3 each, 6 for $16.
Buckeye Bee Co., Justus, O.

FOR SALE—Pure three-banded Italian queens, reared from the best honey producing mothers, mated to pure drones. Untested, each $1.50, six. $8, twelve, $15. Tested, each $3, six $14, twelve $25.
H. N. Boley, Hillsboro, Iowa.

WE believe we have the best Italian queens obtainable. Our new system is working wonders. Book your order now for 1921. Untested, $1.50; tested, $3; virgins, imported mothers, 50c. F. M. Russell, Roxbury, Ohio.

FOR SALE—Young three-banded Italians bred from best honey producers. Untested. $1.50; tested, $3. Ready June 1. Book orders now.
W. C. Young, Box 249, Des Plaines, Ill.

SIMMONS strain Italian queens, golden and three-band. Virgins, $1 each. $10 per dozen. A few fine breeders for sale.
Fairmount Apiary, Livingston, N. Y.

QUEENS—I am now offering queens at pre-war prices. Untested, 1, $1.25; 25 or more, $1 each.
W. H. Moses, Lane City, Texas.

FOR SALE—20 colonies of Italian bees in 8 and 10-frame dovetailed hives.
Carl Franke, Mauston, Wis.

CHOICE ITALIANS—Select queens, tested, $2.50; untested. $1.50 each.
Geo. W. Coltrin & Son, Mathis, Texas.

## HONEY AND BEESWAX

WHITE sweet clover honey with small per cent of basswood, in 5-gallon cans, case of 2 cans, $14, one can $7.50. Ten cases at 10c per pound. Sample 10c. C. S. Engle,
200 Center St., Sioux City, Iowa.

FOR SALE—One ton white clover extracted honey in 60-lb. cans, at 15 cents a pound.
Harry Chandler, R. D. 5, New London, O.

GIVE me your best offer for 2,000 lbs. nice clover and basswood extracted honey. Put up in 10-lb. pails or 60-lb. cans.
Walter Jaster, St. Peter, Minn.

ATWATER and his crew are working almost day and night to produce a big crop to supply you and your customers.
Meridian, Idaho.

FOR SALE—Very fine quality basswood-milkweed mostly milkweed) honey in 60-pound cans. P. W. Sowinski, Bellaire, Mich.

FOR SALE—Clover extracted honey, 15c per pound; amber and buckwheat, 12½c, two 60-pound cans to case; amber in 50-gallon barrels, 10c per pound.
H. G. Quirin, Bellevue, Ohio.

HONEY--15c per pound. Walter Reppert,
Gen. Deliv., Shreveport, La.

FOR SALE—Choice clover extracted honey. State quantity wanted.
J. D. Beals, Oto, Iowa.

FOR SALE—Extracted honey. Write for prices. A. L. Kildow, Putnam, Ill.

FOR SALE—Honey. Immediate shipment f. o. b. New York, in 60-lb tins: Calif. white orange, 19c lb.; Calif. white sage, 16c lb.; white sweet clover, 14c lb.; Calif. L A. sage, 13c lb.; West Indian L. A., 10c lb.; West Indian L. A., 10-lb. tins, 6 per case, 15c lb.
Hoffman & Hauck, Woodhaven, N. Y.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 6c a pound for wax rendering. Fred W. Muth Co.,
204 Walnut St., Cincinnati, Ohio.

## SUPPLIES

FOR SALE—Hoffman extracting frames in original boxes, $4.50 per 100.
Bert Willard, Plainview, Ark.

SAVE MONEY on your shipping cases, tin and glass honey containers, etc. Our free price list tells you how. If you rear queens for sale, be sure to send for our price card of mailing cages. The Rattery-Hamilton Co.,
Almont, Mich.

FOR SALE—One new Cowan reversible extractor with brake No. 18; has 12-inch comb pockets; never been used, $35. 25 10-frame Excelsior covers, used, in good condition, 60c each or $12 for the lot; 25 10-frame comb honey supers, used for Danzenbaker sections, in good condition, $1 each, or the lot for $20.
Lynn Z. Silsbee,
20 Leonard St., Dansville, N. Y.

FOR SALE—Ten 10-frame beehives and 22 automatic rifle; or will exchange for bees.
Thos. Cordner, Sparta, Wis.

TEN DOLLARS takes my 10 10-frame painted 4x5 section supers.
O. Biermann, Malcom, Iowa.

FOR SALE—50,000 Lewis No. 1 sections at $5 a thousand. Sizes 4¼x1½ beeway, 4¼x1⅜, 4¼x1 15-16, 4¼x7 to ft, 4¼x2, 4x5x1¾, 4x5x1⅞,, 3⅝x5. Also supers, covers, bottoms, etc. Write for list.
C. C. Brinton, Bloomsburg, Pa.

FOR SALE—Push-in comb queen introducing cage, 25c postpaid. Try it. Safest way known.
O. S. Rexford, Winsted, Conn.

FOR SALE—Owner wants use of outside warehouse, we must vacate, and offer for quick sale, 1-story 8-frame single-wall hives per package of 5 at $15, 10-frame size at $17.50. Staple spaced frames, per package of 100, at $9; 4x5 shipping cases with glass, per package of 25 at $15. Goods first-class. Offer good only as long as this stock lasts.
A. G. Woodman Co., Grand Rapids, Mich.

FOR SALE—200 new 10-frame Root hive bodies, with frames; all in flat; were never uncrated, $340 takes the lot.
Herbert Kietzer, Vernon Center, Minn.

FOR SALE—200 absolutely new 10-frame hives complete, consisting of hive-bodies, tops, bottoms, tin rabbets, nails and Hoffman self-spacing frames knocked down, in lots of 5, $14; 200 full-depth supers with frames, $1.20 each; 500 lbs. of medium brood-foundation at 78c per pound
A. Irish, Doctortown, Ga.

WANTED—To quote special prices on queen cages in quantity lots, to breeders. State quantity.
A. G. Woodman Co., Grand Rapids, Mich.

FOR SALE—Good second-hand double-deck comb honey shipping cases for 4¼x4¼x1⅞ sections, 25 cents per case, f. o. b. Cincinnati; terms cash with order.
C. H. W Weber & Co.,
2146 Central Ave., Cincinnati, O.

FOR SALE—Good second-hand empty 60-lb. honey cans, two cans to the case, at 60c per case, f. o. b. Cincinnati. Terms cash with order. C. H W Weber & Co.,
2146 Central Ave., Cincinnati, O.

SEND us a list of goods wanted and will quote you lowest prices. We are the money-saving house. Price list free. Try us.
H. S. Duby & Son, St. Anne, Ill

## FOR SALE

FOR SALE—25,000 pounds scrap candy, 2½c per pound in barrel lots; about 200 pounds per barrel.
Sterling Products Company, Evansville, Ind.

FOR SALE—Boiler wax press, like new, $18.
F. O'Donnell, Rock Creek, Minn.

FOR SALE—Real estate in San Joaquin Valley, Calif.; great dairying and beekeeping section. If coming to California let us locate you. Inquiries cheerfully answered.
Bradley & Robertson, Riverdale, Calif.

FOR SALE—Cheap—My 20 10-frame painted, 4x5 section supers for $20.
O. Jewell, Mineral Point, Wis.

FOR SALE—70 strong hives of bees, 1,000 brood-frames and lots of other supplies, $2,000. Also, 7-room house, all improvements, lots 125x125, $6,500. A. H. Opfer,
6259 Patterson Ave., Chicago, Ill.

FOR SALE—Several hundred used 60-pound honey cans, 2 to the case. Used only once, 65c each. P. H. Outzen,
White Bear Lake, Minn.

FOR SALE—Cedar or pine dovetailed hives; also full line of supplies, including Dadant's foundation. Write for catalog.
A. E. Burdick, Sunnyside, Wash.

# Queens of Unsurpassed Quality

**3-BANDED QUEENS** **GOLDEN QUEENS**

Our queens are reared from selected stock taken from the best strains of Italians known. Neither trouble nor expense is spared to produce queens of unsurpassed quality. They have proved themselves to be not only great honey gatherers but also, very resistant to disease, especially European foulbrood. Every queen sent out by us we guarantee to give fullest satisfaction.

### Price List of Our Queens

Untested_____ $1.50 each, 6 to 25, $1.40 each; 25 and up, $1.25 each
Sel. Untest. __$1.75 each, 6 to 25, $1.60 each; 25 and up, $1.50 each
Tested ______ $2.50 each, 6 to 25, $2.40 each; 25 and up, $2.25 each
Sel. Test. ____$3.00 each, 6 to 25, $2.75 each; 25 and up, $2.50 each
We clip wings free of charge. Safe arrival we guarantee.

**Ohio Valley Bee Company, Catlettsburg, Ky.** Box 307

FOR SALE—"Superior" Foundation (Weed process). Quality and service unexcelled.
Superior Honey Co., Ogden, Utah.

## WANTED

WANTED—Bees on shares. Stump land with many berries and considerable cultivation; excellent harvest. No other bees within 15 miles.
A. Wm. Koch, Mercer, Wis.

WANTED—Cowan extractor; pay cash; 100 Langstroth frames, $6.50; Incubators, one fourth price. Exchange for gun.
Lorenzo Clark, Winona, Minn.

WANTED—Bees on shares; 100 to 200 colonies in Northern Michigan, for season of 1921. Years of experience on a large scale.
W. A. Latshaw, Clarion, Mich.

WANTED—Bees in colonies, comb and extracted honey. Frank Coyle, Penfield, Ill.

WANTED—Beeswax, old combs and cappings for rendering on shares. Also wax accepted for trade. Top market prices offered.
A. I. Root Co., Council Bluffs, Iowa.

WANTED—Your order for "Superior" Foundation. Prompt shipments at right prices.
Superior Honey Co., Ogden, Utah.

## SITUATIONS

WANTED—One experienced man, and students or helpers, in our large bee business; good chance to learn. Modern equipment and outfit, including auto truck; located near summer resorts. Write, giving age, height, weight, experience, reference and wages wanted.
W. A. Latshaw Co., Clarion, Mich.

WANTED—Man with some experience to work with bees coming season. State age, experience and wages wanted, based on our furnishing board.
The Rocky Mountain Bee. Co.,
Box 1319, Billings, Mont.

## MISCELLANEOUS

SAMPLE FREE—They say "It's as good now as when Hutchinson ran it." Under new ownership, our bee journal is growing fast, better every issue, a "different" kind of a journal. Let's get acquainted. $1.50 a year, and worth it.
The Domestic Beekeeper, Lansing, Mich.

WRITE for prices on two and three-frame nuclei and queens, cypress hives and frames.
Sarasota Bee Co., Sarasota, Fla.

AIREDALE TERRIERS—Fine puppies, pedigreed, and from choice strains. At stud, Jack Dempsey, IV, A. K. C. No. 292,346. Fee $15.; 10¾ in. head at 10 months old.
The Airedale Kennels, Glenwood, Mich.

LEAGUE EMBLEMS—We still have a number of U. S. Beekeepers' emblems, buttons or pins, bronze or gold. Send 50 cents and get one
American Bee Journal, Hamilton, Ill.

WANT to hear from owner having farm for sale; description, price.
Care Lakenvelder Farms, Toccoa, Ga.

BLACK SIBERIAN HARES—Enormous sizes, delicious meat and beautiful fur. Write for information and prices.
Siberian Fur Farm, Hamilton, Canada.

DR. MILLER'S BEE SONGS are in "Songs of Beedom.' Ten songs for 20 cents, postpaid; 2-cent stamps taken. Also Teddy Bear souvenir postal cards, 10 for 10 cents. Address Geo. W. York, Box 84, Spokane, Wash.

## QUEENS

A good queen for June means more honey for the supers.

**Pure Three-Band Italians**

Untested, $1.25; select untested $1.50.

**D. W. HOWELL, Shellman, Ga.**

## QUEENS

**Select Three-Banded Italians of the highest quality (one grade**

Eight hundred honey-gathering colonies from which to select the very best breeders. No one has better bees than I. Can make prompt delivery by return mail. I have not yet disappointed a customer.

| PRICES | To July 1 | | After July 1 | |
|---|---|---|---|---|
| | 1 | 12 or more | 1 to 49 | 50 or more |
| Untested, each | $ 1.50 | $1.25 | $1.25 | $1.00 |
| Tested, each | 2.00 | | | |
| Breeders, each | 25.00 | | | |

A new customer from Missouri, where you have to show them, writes: "The dozen queens arrived promptly. They are the most beautiful I ever saw." (Name on request.) Another one, from the same state, writes: "Your 100 2-lb. packages averaged over 90 pounds surplus honey per colony; 10 pounds more per colony than the other 2-lb. packages purchased elsewhere." H. H. THALE, Durham, Mo.

Now listen to this, from Ontario, Canada: "Bees and queens purchased of you last season all wintered without a single loss. Save me 50 untested queens for May delivery." (Name on request.)

My customers say my queens stand the northern winters. They are bred up for this purpose, combined with the highest honey-gathering qualities and prolificness.

Pure mating, safe arrival, and satisfaction guaranteed. It is left with customer to say what is satisfaction.

**JASPER KNIGHT, Hayneville, Alabama**

## BEEKEEPERS

WE MANUFACTURE DOVETAILED HIVES, HOFFMAN FRAMES, SECTIONS AND SHIPPING CASES

Our hives are made of best grade White Pine, cut accurate and smooth to standard measure ections are made of Basswood polished on both sides. There are no better made.

We carry a complete line of everything used in the apiary. Our shipping facilities are as good as can be found anywhere. We want your business. We guarantee prompt and satisfactory service. Price list free.

**MARSHFIELD MANUFACTURING COMPANY, Marshfield, Wis.**

## BEE SUPPLIES

### THE VERY BEST QUALITY AND SERVICE

We have a large stock of Hives, Bodies, Supers, Foundation and other supplies ready for immediate shipment.

Give us an opportunity to quote you our prices. We are certain you will find them attractive.

If you want the Very Best Quality at the Lowest Price, send us your orders at once. All correspondence will have our immediate attention.

**AUGUST LOTZ COMPANY, Boyd, Wisconsin**

## Glass and Tin Honey Containers

2½-lb. Cans, 2 dozen reshipping cases ........$1.45 case; crates of 100, $ 6.50
5-lb Pails (with handles), 1 dozen reshipping cases.... 1.35 case; crates of 100, 8.30
10-lb. Pails (with handles), ½ doz. reshipping cases.... 1.10 case; crates of 100. 12.75
60-lb Tins, 2 per case—new, $1.30 case; used, 50c.

### WHITE FLINT GLASS, WITH GOLD LACQD. WAX LINED CAPS

8-oz. Honey Capacity, Cylinder Style ........$1.50 per carton of 3 dozen
16-oz. Honey Capacity, Table Jar Service ........ 1.40 per carton of 2 dozen
Quartor3-lb.HoneyCapacity, Mason Style ........ 1.00 per carton of 1 dozen

**HOFFMAN & HAUCK, Inc. Woodhaven, N. Y.**

# FOR SALE

## IF YOU WANT THE CHEAPEST, BUY THE BEST

I am prepared to furnish for the season of 1921 twenty-five hundred two and three frame nuclei of my bright 3-banded Italian bees, headed with young, vigorous queens. These bees are free from disease, and safe arrival guaranteed. Hoffman frames wired and on full sheets of foundation; very few combs over two years old. I am booking orders now. One-fourth or one-half cash with order, balance before shipping.

Two-frame, $4.25; three-frame, $5.25. If queens are wanted, add $1.25 each.

After May 5th I will be ready to mail queens at the following prices: Untested, single $1.50, six for $8, twelve for $15. Tested, $2.50 each. Select tested, $3.50 each. Write for prices for large lots.

**A. B. MARCHANT, Jesup, Ga.**

**Reference: Merchants and Farmers Bank of Jesup.**

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# TENNESSEE-BRED QUEENS

Forty-nine Years' Experience in Queen-Rearing
Breed Three-Band Italians Only

| | Nov. 1st to June 1st | | | June 1st to Nov. 1st | | |
|---|---|---|---|---|---|---|
| | 1 | 6 | 12 | 1 | 6 | 12 |
| Untested Queens | $2.00 | $ 9.00 | $16.80 | $1.50 | $ 8.00 | $14.50 |
| Select Untested | 2.25 | 10.50 | 18.00 | 2.00 | 9.50 | 16.00 |
| Tested | 3.50 | 20.00 | 35.00 | 3.00 | 16.00 | 30.00 |
| Select Tested | 4 00 | 22.50 | 40.00 | 3.50 | 18.50 | 35.00 |

Select tested, for breeding $7.50

The very best queen tested for breeding $15

Capacity of yard 6000. I sell no bees by the pound or nuclei except with high priced tested and breeding queens

Queens for export will be carefully packed in long distance cages, but safe delivery is not guaranteed

**JOHN M. DAVIS, Spring Hill, Tenn.**

Five colonies of your stock produced 2660 finished sections—the best one 616 finished sections
JOHN M. BIXLER, Corning, Iowa, February 1, 1921

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## FOREHANDS' QUEENS. They Satisfy, Why?

Because of 28 years of experimental work with both queen breeding and honey production.

With breeding and selecting of imported queens, I have reached a standard which is ideal. Queens as good, but none BETTER. Why experiment? Take advantage of the life experience of my breeders.

OUR SERVICE STATION

We are ready to serve you at all times, whether you desire queens or advice. Let us help you with your bee problems. All questions are cheerfully answered.

I breed three-band Italians only.

| June 1 to November 1. | 1 | 6 | 12 |
|---|---|---|---|
| Untested | $1.50 | $ 7.50 | $13.50 |
| Select Untested | 1.75 | 9.00 | 16.50 |
| Tested | 2.50 | 13.00 | 24.00 |
| Select Tested | 3.00 | 16.50 | 30.00 |

Orders booked now for spring delivery. One-fourth the full amount with order and balance when shipment is desired. Pure mating, safe arrival and satisfaction guaranteed. Write for circular and large order discounts. Shipment to foreign countries at receiver's risk.

Bees in 2-pound packages, 1, $6; 25 or over, $5.80; 50 or over, $5.40; 100 or over, $5. Without queens.

Will begin shipping bees as early as weather will permit.

**N. FOREHAND, Ramer, Alabama**

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## 2 FRAME NUCLEI

Ready to ship now. Orders filled in rotation.
Terms cash. Reference, Merchants National Bank of this city.
Prices f. o. b. Watertown:
2-frame nucleus, no queen, at $6.00.
2-frame nucleus and queen, at $7.00.

ROCK RIVER APIARIES
Box 377. Watertown, Wisconsin

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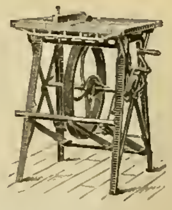
## BARNES' FOOTPOWER MACHINERY



Read what J. E. Parent, of Chariton, N. Y. says: "We cut with one of your Combined Machines last winter 50 chaff hives with 7-in. cap, 100 honey-racks, 500 frames and a great deal of other work."

**W. F. & JOHN BARNES**
**995 Ruby St., ROCKFORD, ILLINOIS**

---

## Stutts Italian Queens are Supreme

My Italians are gentle, prolific, very resistant to foulbrood, and the best of honey gatherers. Untested, $1.25; 6, $6.50; 12, $12.50. Select untested, $1.50; 6, $8; 12, $15.

Take advantage and requeen your yard with the best strain of Italians.

I sell no nuclei, or bees by the pound. Health certificate with every queen.

Pure mating and safe arrival guaranteed.

**ALFRED A. STUTT, Lincoln, Ill.**

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**SHE-SUITS-ME queen-bees, prices for 1921: Untested Italians, $2 each; $1.75 each for 10 or more, prior to June 15. After June 15, 1 to 9 queens $1.50 each, 10 to 24 $1.40 each, 25 and up $1.25 each.**

**ALLEN LATHAM,**
**Norwichtown, Conn.**

---

## GOLDEN QUEENS 1921

Untested, $1.50 each, or 6 for $8. For 100 lots write for prices. I will begin shipping about April 20, and I guarantee safe arrival and reasonable satisfaction to everybody.

**R. O. COX, Rt. No. 4, Luverne, Ala.**

---

## BEE SUPPLIES

We carry a complete stock of supplies at all times, and can make prompt shipments. Our prices will interest you.

**Send Us Your Inquiries**

**A. H. RUSCH & SON CO.**
**Reedsville, Wis.**

---

**Pure Italian Queens of the Best Known Strain.—A. I. Root and H. D. Murry 3-Banded Only.**

Booking orders now for immediate delivery of 2-frame nuclei, 2-lb. packages and full colonies.

Prices: Untested, 1, $1.50; 12, $14.50. Tested, 1, $2.25; 12, $24. Select tested, 1, $3; 12, $30. Two-frame nuclei, with untested queen, $6; 25 or more, $5.50;. Two-frame nuclei, with tested queen, $6.75; 25 or more, $6.25. Two-lb. package hybrid bees, each $4. Add price of queen wanted. No disease near here. Health certificate with all I have for sale. Safe arrival and satisfaction guaranteed.

P. S. Terms, one-fourth with order, balance due at shipping time.

**BAUGHN STONE, Manchester, Tex.,**
**Formerly Murry & Stone.**

## BE PREPARED

BEES wintered better than for a number of years, due to mild winter. Early breeding will be heavy.

Be prepared for swarming. Do not lose the honey crop on account of lack of sections, or extracting frames. Order before it is too late.

**"Falcon"** quality has stood supreme for over 40 years. Write for our new red catalog. We guarantee safe arrival on all shipments.

**W. T. FALCONER MFG. CONCERN, Falconer, (near Jamestown) N. Y., U. S. A.**

*"Where the best Beehives come from"*

**Distributor for the Central West, WM. H. RODMAN, 2027 Main Street, Gateway Station, KANSAS CITY, MO.**

## ROOT GOODS—PROMPT SERVICE

We are well supplied with a complete line of Root Goods, and Airco Foundation. Our prices will save you money. We are now listing many exceptional bargains in eight frame equipment. Get our figures, if you want quality goods at best possible prices.

**WERTZ SEED COMPANY, Sioux City, Iowa**

## MR. BEEKEEPER—

We have a large plant especially equipped to manufacture the supplies that you use. We guarantee all materials and workmanship. We ship anywhere. We allow early order discounts and make prompt shipments. *Write for free illustrated catalog today*

**LEAHY MFG. CO., 90 Sixth Street, Higginsville, Missouri**

**J. W. ROUSE, Mexico, Missouri** **A. M. HUNT, Goldthwaite, Texas**

## QUEENS AT PRE-WAR PRICES

Fine, large Italian queens, guaranteed to be of very high grade and to give the best of satisfaction. Prices:

Untested, $1 each, $10 per dozen, $80 per 100. Tested $2 each.

Will also sell during the month of June, a limited number of 3-lb. packages of hybrid bees with Italian queen, shipped on 1 frame of honey and brood, at $4.50 per package.

**A. R. IRISH, Doctortown, Ga.**

### BUY YOUR HIVES OF VOSS WOOD SHOP AT EXIRA, IOWA

Standard sizes and widths, half-lock corners, reversible bottoms, lock-cap cover. Made of selected white pine, well machined and accurately made.

Prices are in lots of 5, with frames; no foundation.

| 8-frame. | | 10-frame. |
|---|---|---|
| $14.50 | One Story Standard | $15.90 |
| 8.10 | Hive Bodies | 9.10 |
| 9.45 | Jumbo Bodies | 9.95 |
| 4.00 | Reversible Bottoms | 4.25 |
| 4.25 | Lock Cap Cover | 4.60 |

3 per cent discount in lots of 100.

Odd sizes and special, same price, if not using more material. Send sample. Prompt shipments.

**VOSS WOOD SHOP**
**Exira, Iowa**

# QUEENS

Write for catalog of high grade Italian Queens. Pure mating and safe arrival guaranteed.

1 to 4 inclusive, $3 each

5 to 9 inclusive, $2.90 each

10 or more $2.80 each

Breeders, $12.00 each

**JAY SMITH, Route 3**
**VINCENNES, IND.**

# LOWER PRICES

Order from these quotations

| | |
|---|---|
| Untested Italian queens ____$ | 1.25 |
| Per hundred ____________ | 98.75 |
| Two pounds bees with queens | 5.75 |
| 100 packages ____________ | 550.00 |
| Section honey boxes, No. 2 grade ________________ | 12.60 |
| Hoffman brood frames, per M | 65.00 |
| Extracting bodies with frames 10-frame size, crate of 5__ | 7.50 |
| Medium brood foundation, "Airco," 100 pounds _____ | 75.00 |
| Ex. thin foundation, "Airco," 100 lbs. _____________ | 82.00 |
| 5-lb. friction top pails (200)_ | 20.50 |
| Cases 5-gal. cans (2 in case). | 1.35 |
| 5-gal. cans in bulk (100)___ | 41.75 |
| Double tier glass front shipping cases (100) ________ | 50.00 |

**The Foster Honey & Merc. Co.**
Boulder, Colorado

Write for our Price List
"Foster your Business"

## COMB HONEY PRODUCERS MAKE MORE HONEY

By using the Rauchfuss Combined Section Press and Foundation Fastener. This is the most simple, accurate and rapid device of its kind to be had. Will put up 4,000 sections in a day, and each will be exactly right.

One Beekeeper writes: "If you have but ten colonies of bees you cannot afford to be without this great time saver."
Write for our descriptive circular.
Price $9.10. Mailing weight four pounds.

**H. D. RAUCHFUSS,**
**Englewood, Colo.**

# QUALITY QUEENS AT QUANTITY PRICES

**Breed Three-Band Italians only**

PRICES FOR 1921

| | Nov. 1 to June 30. | | | July 1 to Nov. 1. | | |
|---|---|---|---|---|---|---|
| | 1 | 6 | 12 | 1 | 6 | 12 |
| Untested ............ | $2.00 | $ 9.75 | $18.00 | $1.50 | $8.00 | $15.00 |
| Select Untested ............ | 2.25 | 11.25 | 19.80 | 1.75 | 9.75 | 16.80 |
| Select Tested ............ | 3.50 each | | | 3.00 each | | |

Breeding queens after June 15, with 2-frame nuclei, $15.00 each.

Queens are reared from mothers whose colonies are GENTLE, HARDY, and as HONEY GATHERERS will compare with any. Each and every queen reared by the latest and most approved methods, thus insuring queens that are capable of duplicating the excellent characteristics of their mothers.

I rear all my queens personally, and strive for QUALITY instead of quantity. You may rest assured that when you order queens of us you are getting among the best that can be produced. You take absolutely no risk in getting our queens for SATISFACTION and safe arrival guaranteed in the United States and Canada. Foreign shipments at receiver's risk. I sell no bees by the pound, nor nuclei, only with breeding queens. Try and estimate your needs for the approaching season and place your order early.

**HERMAN McCONNELL, Robinson, Illinois**

# QUEENS, Select Three-Banded

Write for descriptive circular of our Select Italian Queens. Pure mating, safe arrival and satisfaction guaranteed

| | May 1 to June 15 | | | June 15 to Nov. 1 | | |
|---|---|---|---|---|---|---|
| | 1 | 6 | 12 | 1 | 5 | 12 |
| Untested ____________ | $2.00 | $10.00 | $18.00 | $1.50 | $ 9.00 | $15.00 |
| Select Untested________ | 2.50 | 12.00 | 20.00 | 2.00 | 10.00 | 18.00 |
| Tested ____________ | 3.50 | 19.50 | 36.00 | 3.00 | 16.00 | 30.00 |
| Select Tested ________ | 4.00 | 22.50 | 40.00 | 3.50 | 19 50 | 36.00 |

**HARDIN S. FOSTER, Columbia, Tenn.**

# HAND-MOORE QUEENS

Dear sinner friends and beekeepers:

This is our queen ad How did our queens sit on your stomach last season? Our queens are Hand's and Moore's If you like our queens tell all your neighbors about it, and remember you can always get some more from headquarters. But if you don't like them please keep your "doggone" mouth shut.

Untested, $1.50; 6 for $8. Select, $2; 6 for $10. Tested, $2.50; 5 for $10

**W. A. LATSHAW CO., Clarion, Mich.**

# GOLDEN ITALIAN QUEENS

| | Nov. 1 to June 1 | | | June 1 to Nov. 1 | | |
|---|---|---|---|---|---|---|
| | 1 | 6 | 12 | 1 | 6 | 12 |
| Untested ____________ | $2.00 | $ 9.00 | $16.80 | $1 50 | $ 8 00 | $14.50 |
| Select Untested____________ | 2.25 | 10.50 | 18.00 | 2.00 | 9.50 | 16.00 |
| Tested ____________ | 4.00 | 22.50 | 40.00 | 3.50 | 10.50 | 36.00 |
| Select Tested ____________ | 4.50 | 25.00 | 45.00 | 4.00 | 22.50 | 40.00 |

**BREEDERS $12.50 TO $25.00**

10 per cent additional for Exported Queens. Queens for Export will be carefully packed in long distance cages, but safe delivery is not guaranteed.

NO NUCLEI, FULL COLONIES OR POUND PACKAGES.

**BEN G. DAVIS, Spring Hill, Tenn.**

# CROP AND MARKET REPORT

## CROP PROSPECT

Throughout the whole clover region represented from Maine to Nebraska, prospects are usually very good, although about half the reports from New York state there will be very little clover. Other States in which the crop seems to be spotted are Illinois, Wisconsin and Minnesota. One State which has had very poor crops for several seasons, now reports without exception, that the prospects are excellent, and that there should be a good crop of clover honey. This is Missouri.

Colorado and the Inter-mountain territory report good prospects for a crop, but most of the reports coming from Southern California are adverse, and state that the beekeepers will do well to get 25 per cent of a normal crop, although recent rains have somewhat changed the situation and make the outlook a little brighter. Prospects in Northern California are much better.

There seems to be a tendency still to hold up the retail prices to about 20 to 25 cents a pound in 10-pound cans. This, likely, is about in line with what prices should be, figuring honey on a 10c jobbing basis.

There have been a few sales of nice white honey at about 8c a pound in carlots, but the most of the honey in the last month or two has been moving at a price of from 12c to 16c per pound in a wholesale way. This, of course, includes the sales of the smaller producers who have not had to sacrifice.

As a whole, honey seems to be moving a little better than a month or two months ago, that is, to the retailer. There is still a lack of buying on the part of the jobbers and brokers, so that it is difficult to dispose of honey in carlots.

It is not likely that all of the 1920 honey will be cleaned up before the new crop comes on, but very probably conditions will be much improved over what was expected two or three months ago.

**Italian Queens of Quality**

Prices for 1921:

| | 1 | 6 | 12 |
|---|---|---|---|
| Virgins | $1.00 | $5.00 | $ 9.00 |
| Untested | 1.50 | 8.00 | 15.00 |
| Tested | 2.00 | 11.00 | |

One-third down books order, balance one week before delivery.

Why not give my queens a trial? They are reared from mothers whose colonies are gentle, hardy and good honey gatherers. I rear all of my queens, personally, and strive for quality, not quantity. Safe arrival guaranteed in the United States and Canada.

**WILLARD A. FRIEND**
Box 112, Bedford, Ohio

**QUIGLEY'S QUEENS AND BEES**

Three-banded Italians, are bred from ideal colonies by double grafting, producing queens of superior quality; 20 years building this strain from the best honey-producing colonies. No disease; 35 years in this location. June delivery. Booking orders now.

Tested, $3; untested, $2, 6 $11, 12 $20; breeders $10, shipped on brood. Three-frame nuclei, untested queen, $9; tested, $10. Ten-frame colony, tested queen, $20. Two-pound package, untested queen, $8; tested, $9.

Purity and satisfaction guaranteed. Send for circular.

**E. F. QUIGLEY & SON,**
**Unionville, Mo.**

**QUINN'S QUEENS OF QUALITY**

Have no superiors—"There's a reason." Are Mandelian bred, good qualities accentuated. Gray Carniolans, Gray Caucasians, most gentle of all, prolific, hardy, vigorous, disease-resisiting white comb builders—they deliver the goods.

ITALIANS, 3-banded, line-bred, pedigreed; need no boosting; they speak for themselves.

**CHAS. W. QUINN, Sabot, Va.**

**Established 1885**

Beekeepers should send for our new catalog, free. Beehives made of white pine. Root Co.'s old standby make of supplies. Order early. Beeswax in exchange for supplies or cash.

**J. Nebel & Son Supply Co.,**
**High Hill, Mo.**

**Quality Bee Supplies**

**FROM A**

**Reliable House**

Without fear or favor, I place my BEE SUPPLIES and SERVICE before you.

It is the small annoyances that often grow into disastrous results. Avoid the so-called "little losses" by using MONDENG'S GOODS.

Quality is first—save time when you put your goods together, by getting supplies that are accurately made. Service is next—no delays when bee supplies are ordered from my factory.

I am ready to meet your urgent needs.

Send for my new price list.

Closing out all Langstroth and Wisconsin hives and supers. Also Langstroth triangular top-bar frames and eight-frame D. T. supers for 4x5 sections. Will sell at cost price. Write for quotations.

**CHAS. MONDENG**
**146 Newton Ave. N. and 159 Cedar Lake Rd. Minneapolis, Minn.**

**THREE BAND AND GOLDEN QUEENS**

that produce hustling bees. Bred to fill the supers. Our breeding stock produced 400 pounds surplus honey in 1920. Our breeding yards are several miles apart. We breed from the very best non-swarming, gentle, long-lived, prolific strains of bees and drones that thirty years' constant work can produce and money can buy. No disease. Satisfaction guaranteed.

1 Untested ........$1.75; 12, $1.50 each
1 Tested .......... $3.00; 12, $2.75 each

**DR. WHITE BEE CO., Sandia, Texas**

**MOTT'S NORTHERN BRED ITALIAN QUEENS**

Have a World-wide reputation.
Sel. Unt., 1, $1.50; 6, $8.50; 12, $15.
Sel. guaranteed pure mated or replace, 1, $1.75; 6, $10; 12, $18.
Sel. tested, $2.50 each.

Filling orders by return mail at this present writing by the aid of my Southern branch. Plans, "How to Introduce Queens" and "Increase," 25c.

**E. E. MOTT, Glenwood, Mich.**

**HONEY, ROOTS, FURS**

Why not increase your profits? A 32-page booklet describing books on Bee Hunting, Medicinal Root Growing, Fur Farming, Tanning, etc., free.

**A. R. HARDING, 75 N. Ohio Ave., Columbus, O.**

**ITALIAN QUEENS**

**$1 EACH**

Write for Quantity Prices

**O. E. TIMM, Bennington, Neb.**

**ITALIAN QUEENS**

Raised from Italian Bees

Untested .................. $1.75 each
Tested .................... 3.25 each

**CHAS. BOONE SAUNDERS**
**Merom, Ind.**

# CALIFORNIA ITALIAN QUEENS

The old reliable three-band stock that delivers the goods. This stock is descendant from the A. I. Root Co.'s best breeders. Then the J. P. Moore long tongue, red clover strain was added. Next some of Doolittle's famous stock was secured, one breeder in particular, one which was selected by Mr. Doolittle himself and caged with his own hands a short time before his death, proved extra remarkable. This season the Jay Smith strain has been secured, and these are proving equal, if not superior, to anything I have ever seen. In order to keep running to maximum capacity till fall, I am offering

## SPECIAL PRICES FOR JUNE, JULY, AUGUST AND SEPTEMBER

Delivery June 15 to October 1, for orders booked in advance:

Select Untested ------------ ----- 1, $1.25; 6, $7.00; 12, $13.00; 25 to 50, $1 each; 100, 90c each
Tested ------------------------ 1, $1.75; 6, $10.00; 12, $18.00
Superior breeder, 1 year old, $5.00

Every queen actually laying before being caged, and fully guaranteed. I also guarantee safe arrival in United States and Canada. Circular free.

**155 SCHIELE ST.** **J. E. WING** **SAN JOSE, CAL.**

# GOOD WILL AND GOOD QUEENS

ARE BACK OF

## FOREHAND'S THREE BANDS

*The Thrifty Kind*

Good will has made our success.

Our good queens will make your success.

These two forces working together have made it possible for us to serve the beekeepers for over a quarter of a century.

Hearty support for twenty-nine years.

Good queens for twenty-nine years.

Each is the proof of the other. Both are proof that you will not make a mistake when you requeen with Forehand's Three-bands—the bees that are **surpassed by none, but superior to many.**

Good queens are the success of an apiary. Your success is ours. We try to help you in every way. We give you good queens and good service. We guarantee pure mating, safe arrival, and satisfaction.

We are now booking orders for immediate delivery.

Write for circular giving full information on bees and queens.

**Prices:**

| **Up to June 30** | 1 | 6 | 12 |
|---|---|---|---|
| Untested | $2.00 | $10.00 | $18.00 |
| Select Untested | 2.25 | 11.50 | 21.00 |
| Tested | 3.00 | 16.00 | 30.00 |
| Select Tested | 4.50 | 25.00 | 45.00 |

**Pound Bees from May 1 to June 15**

One pound package: 1, $3.75; 25 or over, $3.50; 50 or over, $3.25; 100 or over, $3.00.

Two pound package: 1, $6.00; 25 or over, $5.80; 50 or over, $5.40; 100 or over, $5.00.

Add the price of queen wanted.

Write for prices in large quantities.

**W. J. FOREHAND & SONS, Fort Deposit, Ala.**

**SOUTHLAND APIARIES**

W. S. TATUM, Prop.

BY INDUSTRY WE THRIVE

Box 585. HATTIESBURG, MISS.

DISTRIBUTORS OF

**ROOT QUALITY BEE SUPPLIES**

**AIRCO FOUNDATION**

**We sell Root, Hoffman frames, full depth, $9.00. 15% off on all hives and supers, 10% off on all other supplies. Discount on quantity orders**

PURE ITALIAN QUEENS

| | | | |
|---|---|---|---|
| Untested - - - | $1.50 ea. | 12 or more - - | $1.25 ea. |
| Tested - - - | 2.50 ea. | 12 or more - - | 2.25 ea. |
| Select Tested - - | 3.00 ea. | 12 or more - - | 2.75 ea. |

BEES IN POUND PACKAGES

Shipped on Comb of Foundation

| | | | |
|---|---|---|---|
| 1-pound package bees, no queen, | $3.00 | 25 or more, | $2.75 |
| 2-pound package bees, no queen, | 5.00 | 25 or more, | 4.75 |
| 3-pound package bees, no queen, | 7.00 | 25 or more, | 6.50 |

TWO AND THREE-FRAME NUCLEI

| | |
|---|---|
| Two-frame nucleus, no queen - - - - - | $4.50 |
| Three-frame nucleus, no queen - - - - - | 6.00 |

SPECIAL

| | |
|---|---|
| One-frame brood and pound bees, no queen - - | $4.00 |
| Two-frame nucleus, with young tested queen - - | 6.50 |

Bees will build up faster with frame of young brood in the hive.

FULL COLONIES

Good strong colonies on good combs, well filled with brood and in new painted hives.

| | |
|---|---|
| Colony in new 8-frame hive, no queen - - - | $18.00 |
| Colony in new 10-frame hive, no queen - - - | 20.00 |

Select your queen from above and add her price.

## BEE SUPPLIES

**ROOT'S GOODS AT FACTORY PRICES WITH WEBER'S SERVICE**

We carry several carloads of bee supplies, and are able to give prompt shipment at all times. Our motto is a customer must be satisfied. Give us a trial and we will show you how quickly we will answer your correspondence. Send your order and it will follow 24 hours after we receive it. Our new catalog will be ready about January 15; send for same. We have thousands of satisfied customers, why not you? Send a list of your wants and we will quote you.

**C. H. W. WEBER & CO., 2163-65-67 Central Ave., Cincinnati, O.**

**THE AULT 1921 BEE SHIPPING CAGE—Patent Pending**

1st. It is a dark cage, much more so than the open screen cages we have been shipping in in the past.

2nd. The feeder uses pure sugar syrup. Better than Honey or Candy to ship on; it contains water as well as feed.

3rd. Feeders are made more substantial, one-third larger, an have screw cap that will not jar out.

4th. Instead of one small hole, we now use a cotton duck washer in the screw cap that has proven to overcome all the objections found to the liquid feed method.

5th, The Cage is one piece screen wire, protected by thin boards on the outside. Send for circular describing the cage in detail, prices, etc.

ORDERS are coming in daily for 1921 SHIPPING.
Will book your order with 20 per cent down, balance just before shipping

**QUEENS** **PACKAGE BEES** **QUEENS**

My free circular gives prices in detail, etc. Safe delivery guaranteed within 6 days of shipping point. We ship thousands of pounds all over U. S. A. and Canada.

1 pound pkg. bees $3.00 each, 25 or more $2 85 each
2-pound pkg. bees $5.00 each, 25 or more $4.75 each
3-pound pkg. bees $7.00 each, 25 or more $6.65 each.
F. O. B. shipping point. Add price of queen wanted.
1 Untested Queen $2 each, 25 or more $1.75 each
1 Select untested, $2.25 each, 5 or more $2 each.
1 Select Tested Queen $3.50 each, 25 or more $3.00 each
1 Tested Queen $3.00 each, 25 or more $2.70 each

**NUECES COUNTY APIARIES** E. B. AULT, Prop. **CALALLEN, TEXAS**

## "SUPERIOR" FOUNDATION. Yes, we are ready for the rush

Many tons now ready for shipment, and our machines are running to utmost capacity. Use the best. If your dealer can't supply you, write us for price, stating quantity required. We also accept beeswax for foundation or supplies.

**"Everything in Bee Supplies."**

SUPERIOR HONEY CO., **Ogden, Utah** **(Manufacturers of Weed Process Foundation)**

## ITALIAN BEES AND QUEENS OF PURE THREE BAND STOCK

Bred from best hustlers, by methods that years of experience have taught us are best, including the use of large, strong, nuclei, which insures young queens emerging strong and vigorous. Safe arrival in U. S. and Canada. Health certificate with each shipment. Satisfaction guaranteed.

Untested, 1 to 12, inclusive, $1.50 each; over 12, $1.25 each.
Select untested, 1 to 12, inclusive, $1.75 each; over 12, $1.50 each
Tested, 1 to 12, inclusive, $2.50 each; over 12, $2.25 each.
Select tested, suitable for breeders, $5.00 each.
Two-frame nuclei, $5.00 each. Three-frame nuclei, $7.00 each.
Add price of queen wanted with each.
Eight-frame colony, $15.00. Ten-frame colony, $17.50.
All standard equipment and wired frames.

**JENSEN'S APIARIES, Crawford, Miss. R. F. D. No. 3**

## WESTERN BEEKEEPERS!

We handle the finest line of bee supplies. Send for our 68-page catalog. Our prices will interest you.

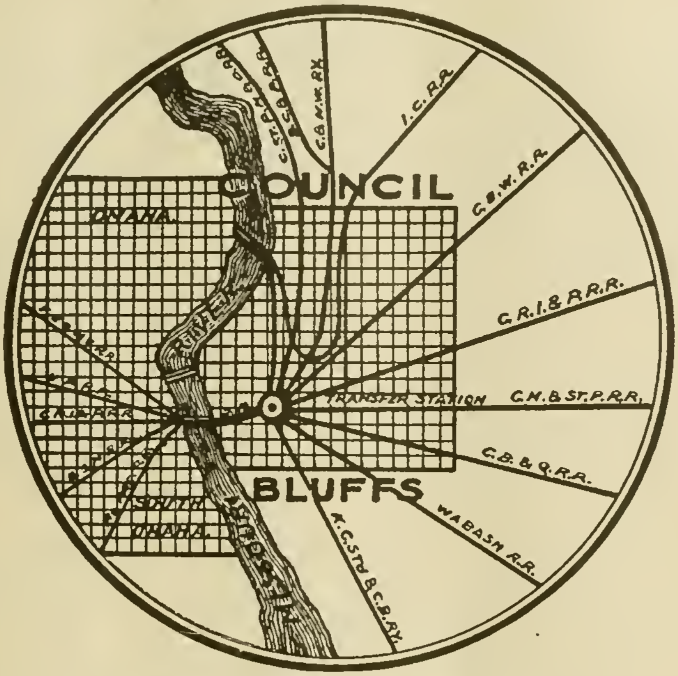
**The Colorado Honey Producers' Association, 1424 Market St.,
Denver, Colo.**

Vigorous Young Italian Prolific Laying

**LOGAN $2.00 QUEEN**

*DOOLITTLE* STRAIN
ORDER NOW
*ALL* QUEENS ARE
LAYING BEFORE SHIPMENT

Shipment After May 15, Alton L. Logan, Edwardsville, Ill.


COUNCIL
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SOUTH OMAHA
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C.&N.W.RY.
I.C.R.R.
C.G.W.R.R.
C.R.I.&P.R.R.
TRANSFER STATION
C.M.&ST.P.R.R.
C.B.&Q.R.R.
WABASH R.R.
K.C.ST.J.&C.B.RY.

## ONE REASON WHY—

we can serve western beekeepers to their advantage is because nine trunk lines run from our siding into all parts of the west. That's why we can get supplies to you quickly, and at a saving of time and freight charges. If you are in need of supplies let us serve you.

| | | |
|---|---|---|
| **HIVES** | **COVERS** | **HOFFMAN FRAMES** |
| **SUPERS** | **BOTTOMS** | **TINNED WIRE** |

| | |
|---|---|
| **ESCAPE BOARDS** | **HONEY CONTAINERS** |
| **HONEY BOARDS** | **ROOT SMOKERS** |

**THE ROOT QUALITY SECTIONS**
**THE NEW FOUNDATION—AIRCO**

**ALL OF THE ROOT QUALITY**

*Our Business—Producing Such a Quality*
*Our Specialty—Service all the Time*

**THE A. I. ROOT CO. OF IOWA**
**COUNCIL BLUFFS, IOWA**

---

QUALITY TIN CANS FIRST
For PACKERS and MANUFACTURERS of FOOD PRODUCTS
LARGE CAPACITY LONG EXPERIENCE
YOUR INQUIRIES SOLICITED
W. W. BOYER & CO. INC
BALTIMORE, MD.

---

**LILLY'S**
Established 1885

Seattle
Yakima
Ellensburg
Wapato
Portland

**HEADQUARTERS FOR**

**LEWIS BEEWARE**
**DADANT FOUNDATION**
**WESTERN PINE HIVES**

*Write Us. It Pays*

**LILLY'S**
Established 1885
The Chas. H. Lilly Co.
Seattle, Yakima, Portland

---

**PORTER BEE ESCAPE SAVES HONEY TIME MONEY**

PORTER
BEE ESCAPE
PATENTED

For sale by all dealers.
If no dealer, write factory
R. & E. C. PORTER, MFRS.
Lewistown, Illinois, U. S. A.
(Please mention Am. Bee Journal when writing)

---

A NEW BEE BOOK
"Dadant's System of Beekeeping"
Send for a copy today.
Price $1.00.

# HIGHEST QUALITY OF ITALIAN QUEENS

**3-BANDED** Twenty-Five Years of Select Breeding from the Best **GOLDEN**

After 25 years of select breeding, not all of the time in a commercial way, but as large honey producers, therefore rearing a great number of queens for our own use, we have a strain of pure Italian bees which we believe are unexcelled for honey production, disease-resisting qualities and gentleness. Owning about 1,500 colonies of bees which we run for honey, gives us ample opportunity to test them out in every way. As our apiary interests extend as far north as Northern Ontario, we have a chance to test them from a climatic standpoint, in person. We therefore find that our bees will stand the long winters with very satisfactory results. You will find them very hardy and long-lived.

**What Others Say About Them**

M. C. Berry & Co., Hayneville, Ala.

"The queens I got from you have all others 'skinned.' They are very gentle, best of workers and stand the long winters here fine. Other queens coming from shorter distances do not hold a candle with them." Gilbert Plains, Man., Canada. (Name on request).

M. C. Berry & Co., Hayneville, Ala.

"The best queens I ever had have come from you." Great Harrington, Mass. (Name on request).

M. C. Berry & Co., Hayneville, Ala.

"I wish to inform you that one of your queens made the most honey of any in the yard. It made 250 pounds of honey against an average of 103 pounds for the yard. All of your queens made good. I never have had a queen from you that did not return a big per cent on the investment." Marion, Ind. (Name on request).

M. C. Berry & Co., Hayneville, Ala.

"I am pleased to say that your bees have given me every satisfaction in every way." Toronto, Canada. (Name on request).

M. C. Berry & Co., Hayneville, Ala.

"The introduction of your queens into six colonies of bees that had European foulbrood cleaned up the disease." Pine Ridge, N. Y. (Name on request).

**Price List of Our Queens**

| | | | |
|---|---|---|---|
| Untested | $1.50 each; | 6 to 50, $1.25 each; | 50 to 100 and up, $1.00 each |
| Select untested | $1.75 each; | 6 to 50, $1.50 each; | 50 to 100 and up, $1.25 each |
| Tested | $2.25 each; | 6 to 50, $2.10 each; | 50 to 100 and up, $2.00 each |
| Select Tested | $3.00 each; | 6 to 50, $2.75 each; | 50 to 100 and up, $2.50 each |

Queens by return mail when desired. Wings clipped free of charge on request. Satisfaction and safe arrival guaranteed.

**M. C. BERRY & CO., Hayneville, Alabama, U. S. A.**

# ITALIAN BEES AND QUEENS

**Guaranteed to Give You Satisfaction**

Untested Queens, $1.25 each; 12 or more $1.00 each

**After June 15**

Untested Queens $1 each: 12 or more 75c each Tested Queens $2 each; Breeders $5 to $25

**NUCLEI**

| | |
|---|---|
| One frame, no queen | $2.00 |
| Two frame, no queen | 3.75 |
| Three frame, no queen | 5.25 |

**POUND PACKAGES**

| | |
|---|---|
| One pound package, no queen | 2.00 |
| Two pound package, no queen | 3.75 |
| Three pound package, no queen | 5.25 |

Add price of queen wanted

**FULL COLONIES**

New painted hives, good combs, young tested queens

| | |
|---|---|
| Colony in eight-frame hive | 20.00 |
| Colony in ten-frame hive | 22.00 |

**BEE SUPPLY SPECIALS**

100,000 "A" grade sections in 4¼x4¼x1-⅞; 4¼x4¼x1 ½ and 4x5x1⅜ at $15.00 per 1000.

Shipping **Cases** for above sections at 65c each. Quality as good as can be had.

A job lot of good standard **Cypress Covers and Bottoms** in packages of five, made of ⅞ lumber thruout at 55c each.

**HOFFMAN FRAMES**

| | |
|---|---|
| Made of Cypress at | $6 per 100 |
| White pine, best frame made | 8 per 100 |

**A lot of other bargains. Let us quote you. Send for catalog of Cypress Bee Supplies**

**THE STOVER APIARIES, MAYHEW, MISSISSIPPI**

# Lumber that Lasts?

## Here's a Convincing Case of an Experienced Beekeeper who—

CYPRESS RESISTS ALL ROT INFLUENCES

CYPRESS "THE WOOD ETERNAL"

**(But let the gentleman tell it himself:)**

*BUCK GROVE, IOWA, February 2, 1916.*

*"I have been a Cypress man for lo, these many moons. Almost all my dovetail hives are of Cypress, as are bottom-boards, and I think, shallow telescope covers. My hive stands are of Cypress, and stand in the mud and wet all the time and are as solid as when I got the first one some years ago. Cypress is a trifle heavier than white (cork) pine, but not much more than the heavier grade of pine now used. The fact that it is 'everlasting' compensates for all this."* *(Signed) A. F. BONNEY, M. D.*

For a job of repairing or for equipment, the lumber that will give you the greatest real investment value in the market is Cypress, commonly known as the "Wood Eternal." This wood does not rot down like most woods; it lasts and lasts and LASTS, and LASTS and LASTS. It is the Gopher Wood of the Bible—Noah built his ark of Cypress. Since the days of Noah, Cypress has been famous for endurance under the most trying conditions. **Cypress is the one certified Greenhouse wood. That's "some" test. Bottom boards are another.**

## GET A BOOK—IT IS FREE

There are 42 volumes in the internationally famous Cypress Pocket Library, and each is authoritative in its field, and all are FREE. Vol. 1 is the U. S. Gov't Report on Cypress—that is a good authority, surely. Vol. 4 is the Barn Book, with plans and specifications for building. Vol. 36 is the Carpentry Book, making easy a dozen hard jobs of carpentry. Vol. 19 is the Canoe and Boat Book. Vol. 37 is the Silo Book. All are free for the asking. Suppose you ask for one or a dozen, right away.

## WORTH INVESTIGATING

This Cypress wood matter is worth investigating. Just write our "All-round Helps Department."

**SOUTHERN CYPRESS MANUFACTURERS ASSOCIATION**

1251 HEARD NATIONAL BANK BUILDING, JACKSONVILLE, FLA.
1251 PERDIDO BUILDING, NEW ORLEANS, LA

FOR QUICK SERVICE, ADDRESS NEAREST POST OFFICE

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OUR INTRODUCTORY OFFER OF

# ALUMINUM HONEYCOMB

At 50c f. o. b. Pasadena

Makes them cheaper than Wax Combs. Figure the cost

Cost of frames ............ ?
Cost of foundation ............ ?
Cost of wire ............ ?
Cost of labor (Nailing, wiring, putting in foundation) ............ ?
How much honey is used in drawing out foundation ............ ?
Value of this honey ............ ?
Total cost

Compare your figures with our price for a complete aluminum honeycomb ............ $. 50 which cannot be destroyed by moths or rodents. Increases production. Makes extracting of heavy honey easy. Prevents loss by melting. Controls production of drones. **Can be Sterilized.** Lasts forever with reasonable care.

**DUFFY-DIEHL, Inc.**

17 S. Chester Street
Pasadena, Cal.

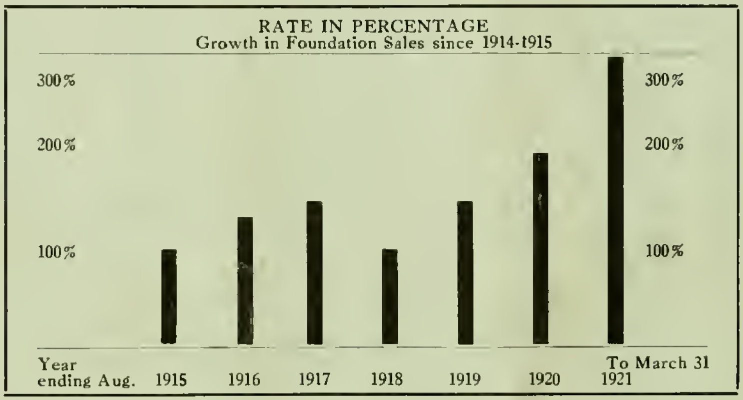
DIAMOND MATCH CO., Apiary Dept., CHICO, CAL., Sole Distributors

# A GREAT RECORD

## MADE BY

# AIRCO COMB FOUNDATION

In this chart, the total sales for the year ending August 1, 1915, is used as the measuring stick for the following years. Sales from August 1, 1920, to date are at a rate that will make the full year's sales fully three times (or 300% of) the sales for 1915. This will be a 200% increase over 1915.



A record to be proud of—one which shows that beekeepers appreciate real values

## Use Airco Foundation this Season, then be your own judge of its merits.

Price per pound packed in boxes as follows

| | Medium | | Light Brond | | Thin | | Extra Thin | |
|---|---|---|---|---|---|---|---|---|
| One 1-lb. box | B511001 | $1.00 | B521001 | $1.03 | B535001 | $1.08 | B545001 | $1.10 |
| One 2-lb. box | B511002 | .95 | B521002 | .98 | B535002 | 1.03 | B545002 | 1.05 |
| One 5-lb. box | B511003 | .92 | B521003 | .95 | B535003 | 1.00 | B545003 | 1.02 |

Full sheets will be cut for sections and boxed, with paper between the sheets at an extra charge of 10c per lb.

For your convenience, prompt service, and saving on carriers' charges you can address the A. I. Root Co., at any of the following points where Airco Foundation is always in stock.

Chicago, 224 W. Huron St.
St. Paul, 290 E. Sixth St.
Indianapolis, 873 Massachusetts Ave
Council Bluffs, Iowa
San Antonio, P. O Box 765
Los Angeles, 1824 E. 15th St.
San Francisco, 52-54 Main St.
New Orleans, 224 Poydras St.
New York, 23 Leonard St.
Philadelphia, 8-10 Vine St.
Norfolk, 10 Commerce St.
Syracuse, 1631 W. Genesee St.

**THE A. I. ROOT COMPANY, West Side Station, MEDINA, OHIO**

# AMERICAN BEE JOURNAL

JULY, 1921

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College

A SOUTH TEXAS APIARY UNDER MESQUITE TREES. TEXAS IS FAMOUS FOR THE QUANTITY AND QUALITY OF ITS HONEY

**You Know this is the Best Veil**
**DON'T DO WITHOUT**

**$1.50 will bring this Veil to you direct from us or any G. B. Lewis distributor**

We give you this GUARANTEE:

If, after you receive your Ideal bee veil, it is not the best veil you ever hope to own, return it and your money will be returned to you and we will still be good friends. Buy an extra one for your wife; she deserves the BEST, and it will make her happy.

## After All Is Said and Done

you, I and the next fellow will be better off and happier when prices in all commodities seek the same level. When a pound of honey bought a loaf of bread, we were happy. Even though the loaf cost 15c it did not anger us. because honey advanced to the same level. Let us not judge the present conditions as "Unfair"; we are simply returning to the price of bread we used to know.

The other prices will eventually seek the same level.

Send for our REDUCED prices on Bee Supplies. Our reduction is as much as one-third off of 1921 prices.

We expect to buy a limited quantity of honey during the summer months. Send a sample and tell us what you want for it. If we can get together, your check will follow the day your shipment is received.

Old Combs and Cappings rendered into wax; bag or box it, address to us and mark the bill of lading " Wax Refuse." This takes the lowest freight rate. We pay market price for the wax, less 5c per pound rendering charges. Do it before the "wax moth" does it for you.

**THE FRED W. MUTH CO.**
**PEARL AND WALNUT STREETS**
**CINCINNATI, O.**

**THE DIAMOND MATCH CO.**

(APIARY DEPT.)

MANUFACTURERS OF

**Beekeepers' Supplies**
**CHICO, CAL., U. S. A.**

Dadant's incomparable Foundation is always kept in stock. Western Beekeepers can be supplied advantageously.

BEEKEEPERS, wherever they may be located, before deciding where to obtain supplies, should write to the Diamond Match Co. for prices and for their Beekeepers' supply catalog.

This Company are the largest manufacturers in the world who make Bee Supplies. They own their own timber lands, mills and factories, and supply goods direct from the tree to the beekeeper.

Full advantage of this low cost of production is given to the purchaser.

The Apiary Department (which is in charge of experienced supply men, who are also practical beekeepers) maintains a constant excellence of product and offers unsurpassed service.

**ALUMINUM HONEYCOMBS**

The Diamond Match Co. and their agents are the sole distributors in the U. S. of the Aluminum Honeycombs, manufactured by the Duffy-Diehl Co., Inc., of Pasadena, Cal. Write for descriptive pamphlets. Eastern beekeepers should send their orders for the Diamond Match Co.'s supplies to **Hoffman & Hauck, 1331 Ocean Avenue, Woodhaven, N. Y.**

**DIAMOND MATCH CO., Apiary Department, Chico, Cal.**

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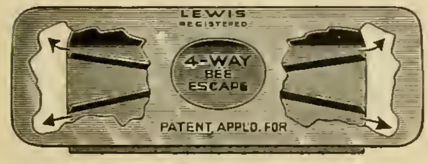
### Ulster County Beemen

The Ulster County Honey Producers' Co-operative Association held their annual picnic at Forsyth Park, Kingston, N. Y., May 26.

After lunch Geo. H. Rea gave a talk on "Swarming," which any beekeeper could listen to with profit.

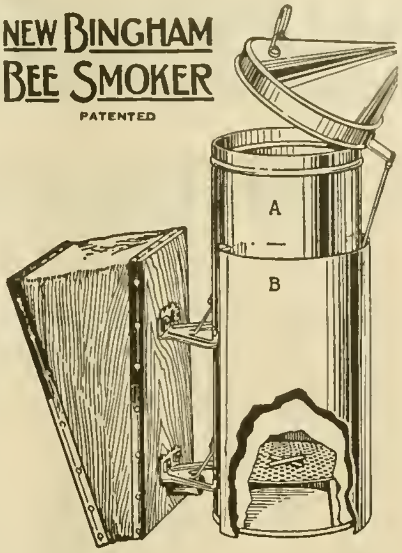
The association roll was enlarged by many new members and all seemed to enjoy themselves greatly.

**Lewis 4-Way Bee Escapes**



Four exits from supers. Fits all standard boards. Springs of coppered steel. Made of substantial metal.

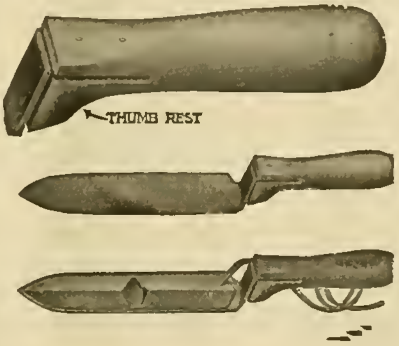
Made by
**G. B. LEWIS COMPANY,**
Watertown, Wis., U. S. A.
Sold only by Lewis "Beeware" Distributors.



**Buy Bingham Bee Smokers**

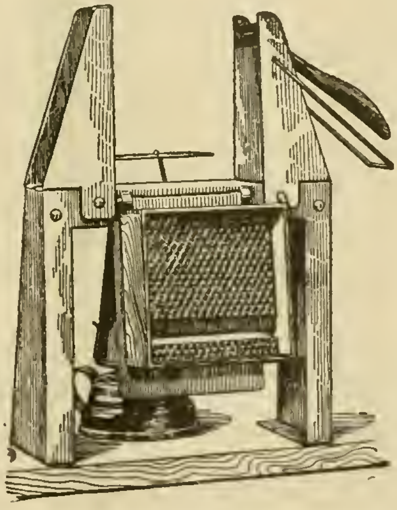
On the market over 40 years. The bellows of best quality sheep skin, is provided with a valve, which gives it pep and makes it respond quickly to the most delicate touch, giving as much or as little smoke as is required. The Big Smoke size, stove 4x10 inches, with asbestos lined shield, permits the holding of the smoker between the knees without danger of burning the trousers or one's legs. This size is much appreciated by extensive operators.

| | Size of stove. inches | Shipping weight. lbs. |
|---|---|---|
| Big Smoke, with shield | 4 x10 | 3 |
| Big Smoke, no shield.... | 4 x10 | 3 |
| Smoke Engine ............ | 4 x 7 | 2¼ |
| Doctor .......................... | 3½x 7 | 2 |
| Conqueror ........... ...... | 3 x 7 | 1¾ |
| Little Wonder .............. | 3 x 5½ | 1½ |



**Buy Bingham Honey Uncapping Knives**

Made of the finest quality steel for the purpose that money can buy. These knives of the proper thickness and quality have given the best of satisfaction, as the old-timers will testify. For over thirty years the men engaged in the manufacture of these knives have been at this work. The perfect grip cold handle is one of the improvements.



**Buy Woodman Section Fixer**

A combined section press and foundation fastener of pressed steel construction It forms comb-honey sections and puts in top and bottom starters all at one handling. Top and bottom starters insure combs attached to all four sides, a requirement to grade fancy. By using this machine you always handle large pieces of foundation. The difficulty of handling the small bottom starters is eliminated, which is not the case with other machines. The section comes away right side up, with the large starter hanging down which is a decided advantage in rapid work, especially in hot weather.

**Special Sale Honey Packages**

60-lb. cans, 2 in a case, per case in quantity lots, f. o. b. Chicago, $1.30; Detroit, $1.30; Baltimore, $1.25. Friction top pails, f. o. b. Chicago, 5-lb. size, crates of 100, $7.75; crates of 203. $15; 10-lb. size, crates of 113, $12.50 f. o. b. Baltimore, 5-lb size, crates of 100, $7.50; 10-lb size, crates of 100, $11. Clear flint glass Mason jars, with lacquered tin caps and wax liners, pints, per gross, $9; quarts, per gross, $10. Quotations on other packages made on request.

**A. G. WOODMAN CO.**
**GRAND RAPIDS, MICH., U. S. A.**

A SUPERIOR QUALITY
AT LESS COST

# SUPPLIES

A SUPERIOR QUALITY
AT LESS COST

## A 15% REDUCTION IN PRICES

Our campaign to secure lower prices on supplies has been successful. Our beekeeper friends have been writing us complaining bitterly of the high prices of supplies charged by most supply manufacturers. Knowing their attitude to be right we have made continuous efforts to get the prices of supplies down.

The Diamond Match Co., whose agents we are, now write us in regard to our efforts: "Remember that you have the assistance and help of the Diamond Match Co. solidly behind you, and that we are in the supply business to stay."

We are glad to pass on this good news and a 15% reduction to our beekeeper friends.

Deduct the 15% from prices listed below when ordering.

Hives, Supers, etc., listed below are in the flat, and are complete with Hoffman Frames, nails, metal rabbets and all inside fixtures

| ONE-STORY DOVETAILED HIVE | |
|---|---|
| Five 8-frame | $16.00 |
| Five 10-frame | 16.90 |

| FULL-DEPTH SUPERS | |
|---|---|
| Five 8-frame | $8.00 |
| Five 10-frame | 9.00 |

| SHALLOW EXTRACTING SUPERS | |
|---|---|
| Five 8-frame | $6.00 |
| Five 10-frame | 6.50 |

| NO. 1 STYLE COMB HONEY SUPERS | |
|---|---|
| Five 8-frame | $5.75 |
| Five 10-frame | 6.25 |

| STANDARD HOFFMAN FRAMES | |
|---|---|
| 100 | $8.50 |
| 500 | 40.00 |

| SHALLOW EXTRACTING FRAMES | |
|---|---|
| 100 | $ 6.70 |
| 500 | 32.50 |

PRICES ON OUR INCOMPARABLE QUALITY FOUNDATION ARE NET

| Medium Brood | | Thin Super | | Light Brood | |
|---|---|---|---|---|---|
| 5 lbs. | 74c per lb. | 5 lbs. | 80c per lb. | 5-lb. lots | 76c per lb. |
| 25 lbs. | 73c per lb. | 25 lbs. | 79c per lb. | 25-lb. lots | 75c per lb. |
| 50 lbs. | 72c per lb. | 50 lbs. | 78c per lb. | 50-lb. lots | 74c per lb. |

Especially prepared Beehive White Paint, one-half gallon cans $2.10

**HOFFMAN & HAUCK, Inc., Woodhaven, N. Y.**

# NOW IS THE TIME

when every minute counts, for you as for your bees. You know, Mr. Beekeeper, the great saving of a drawn comb over a sheet of foundation.

Just so, there must be a saving, when the bees draw out foundation without hesitancy. **Dadant's Foundation** is such a product, so received by the bees.

Combs are drawn once for all. Make sure the foundation you furnish your bees insures as nearly perfect combs as is possible.

There is a great satisfaction in driving a good horse or a good car.

Just so with giving your bees a good foundation.

**REMEMBER: Dadant's Foundation** is the result of years of patient experimentation combined with extensive use in our own apiaries.

We send out **no product** which has not proven its superiority by actual test in our own apiaries.

**We announce the following reductions from our 1921 catalog prices**

**Dadant's Foundation 12c per pound**
32% discount on Lewis Famous No. 1 Sections
30% discount on Bee Hives and other Wooden Goods
25% discount on Bee Veils and Wood and Wire Excluders
20% discount on Bees and Queens and all other Excluders
10% discount on Honey Extractors and Metal Goods
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|---|---|
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AMERICAN BEE JOURNAL

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# MOVING BEES ONE THOUSAND MILES

BY C. S. ENGLE.

WHEN I was a small boy my parents moved from a beautiful farming country in middle Tennessee to Beeville, Texas. At that time there was a terrible drought in southwest Texas. In some places the plains were covered with carcasses of dead cattle. We were told that no rain had fallen for six months, and would have as readily believed none had fallen in six years, from the appearance of the country through which our train traveled.

The country in which we settled was very healthful, with a mild climate. Cattle raising was the chief occupation. There were also located here a score of beekeepers, with many thousand colonies of bees. In favorable seasons good crops of honey were gathered from the huajillo, catclaw and mesquite, small trees and bushes. This honey is white and of fine body and flavor. There was the horsemint plant that produced a strong, amber honey. Cotton was not grown extensively in this locality and could not be termed a honey plant.

Beekeeping never interested me until the spring of 1911. Then I was taking an agricultural course at the Agricultural and Mechanical College. Prof. Wilmon Newell announced to all entomology students that he was going to organize a class for the study of beekeeping. I became interested and attended every class in beekeeping.

When vacation came I secured two colonies of bees and worried them to death by too many experiments and investigations. At the end of the season I had several empty beehives and a desire to become a real beekeeper.

The next year I bought 75 colonies of bees and secured a crop from some of them. In that land of extremes, a late, cold spell had injured the early blooming honey flora, while terrible rains held back later honey flows; then a cessation of rain for the rest of the year cut short the only flow that materialized. This is about the way the seasons continued to run for several years.

In 1914 a fair crop of honey was secured, but the market was ruined by a few honey producers who tried to unload all of their honey at once by cutting prices. A great deal of the 1914 crop was carried over to 1915. There was no spring crop, and much of this honey was used for bee feed. The winter of 1915-16 was extremely dry and prospects, from a beeman's viewpoint, were bad. However, in March the mesquite trees and bushes put out a heavy crop of buds and blooms and yielded a crop of fine white honey. The flow kept up for four weeks through hot and cold weather, also through showery weather. Most of the bees were not quite ready for the flow, but averaged about 50 pounds per colony. The beekeepers were agreeably surprised at this sudden flow from mesquite, as it is not a certain yielder of nectar in this section. Other honey flows did not materialize, but the dry weather continued. Bees went into winter with very little honey.

When the Spring of 1917 arrived the whole southwest section of the State was terribly dry. I had nearly three hundred colonies of bees that I had to feed early in the season. The lack of rain killed all chances of a flow from any of the many plants and shrubs. I made weekly visits to the apiaries and filled the outdoor feeders with syrup made of high-priced sugar.

It was in the early summer that three of the largest beekeepers left this dry country. B. M. Caraway and W. H. Laws each moved a car of bees to Wyoming. H. B. Murray moved to north Texas.

That fall I tried to feed the bees enough sugar syrup to carry them through the winter. The lack of pollen kept the bees from rearing brood, and they went into winter quarters weak. Two apiaries had stored a little honey in the broodnests and wintered fairly well. The balance came through in poor condition and many of them dwindled away. That spring we had a few very light showers that helped plant life considerably. I fed more syrup until the bees gathered honey enough

Bees loaded in freight car, ready to go

to live on. Up to this time I had fed the bees 30 sacks of sugar.

"Distance lends enchantment" is no doubt a truthful saying when applied to beekeepers upon reading or hearing of good bee territory many miles away. It has always been a fascination to me to read of beekeepers harvesting fine crops of honey in the various parts of our country and some of the distant lands. The seasons I got fair crops of honey I would not take much interest in the distant bee territory. The poor seasons would always turn my thoughts to far-away localities where I knew good crops of honey had been secured. At such times I read a great deal of what successful beemen were doing in good localities and studied maps to see just where they were located. My constant dream was of a place where good crops could be expected every year. I was told that there were a few such locations. Dreaming of bettering our condition does little good until we set about making our dreams come true.

All winter I planned and dreamed of moving my bees to a locality where I could be sure of a crop every year. I wrote to nearly everyone that I thought could help me secure such a location. Letters came in reply to my inquiries, telling me of fine unoccupied territory in South Dakota, Wyoming and Nebraska. That spring Mr. Frank C. Pellett was touring Texas, making a study of beekeeping conditions and honey flora. I met him and asked him to tell me what he knew of the different territories under consideration. What he told me helped me in my determination to find a better place.

My time was short and money scarce, or I would have made a trip to look at a few of the places under consideration. I felt as though I would lose all my bees if I kept them in this country another year.

At last I decided to locate in northeast Nebraska. The Western Honey Producers, of Sioux City, Ia., had recommended a basswood-sweet-clover location in the Winnebago Indian Reservation.

While I was learning of bee territory I was also doing all I could to get my bees built up and in shape to move. A light flow of honey saved the day and I was able to rear good queens and increase my bees to 315 colonies. My hives were 10-frame and, in preparing the bees for shipment, I stapled on the bottom-boards and pushed seven combs to one side and nailed the outside comb to hold all combs in place. This allowed the bees a clustering space where the three combs were missing. A screen was nailed on and the cover put on and left until the bees were hauled to the railroad. Several of my beekeeper friends, who had experience in shipping cars of bees cautioned me not to ship heavy combs of honey in my colonies. They argued that heavy combs would most likely break down in moving and, as the bees would be on the road only a few days, little honey would be needed. To my sorrow I followed their advice.

First of all I hauled in all supers and supplies not in use, and last of all I hauled in the bees. The apiaries were located from ten to eighteen miles away. All the hauling was done with a Ford roadster with a truck body on it. Only small loads could be hauled and many trips were necessary.

E. R. Jones, bee inspector of Bee County, made a set of racks out of seven-eighths by one and one-half inch strips to fit in a stock car. These racks were very light in weight and allowed the hives to be pushed in between two racks, just as drawers slide into a wardrobe. This is the simplest, cheapest and best method that I know of. Mr. Jones had superintended the loading of four cars of bees and all went through without breaking down.

I started loading the car on Friday and put in and secured, in their places, supers, covers and other supplies; then the Ford. On Saturday the bees were put in. The car was not loaded in time to be picked up by the train it should have gone out on. The next morning was very warm and I filled my water barrel and then sprayed the car and bees, to cool them.

About 5 o'clock p. m., May 19, I was picked up by a northbound freight and started on my 1,200-mile journey to an unknown country. I supposed that I would be enroute five days, but did not arrive at my destination until 3 a. m., Sunday, May 26. I was supposed to be traveling on a fast freight, but it was too slow to carry bees on in warm weather.

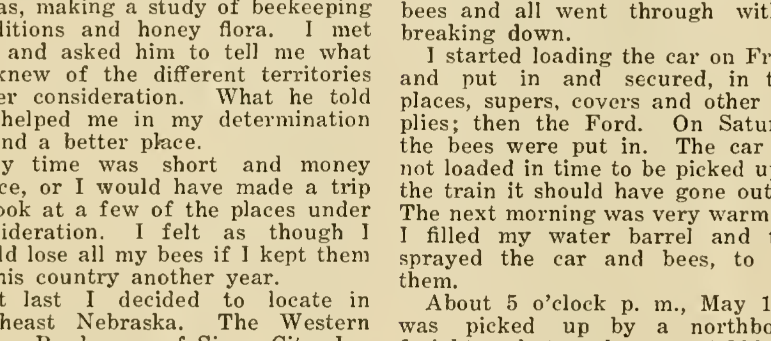
I made it a rule to get out of the car each time we came to the end of a run and hunt up the yardmaster and ask him to see that my car was not delayed in getting out of the yards on the next train. One time the train was going out without my car. I asked the different train crews to bump my car as little as possible, and explained to them that if the car was hit hard bees would probably get out and sting everybody. As a rule the car was handled carefully.

Several times each day I sprayed the bees and also threw water on the the car ceiling and floor to lower the temperature. I found that bees should have very little water sprayed over them at a time. A good deal of time was spent trying to keep the bees cool and watching for hives whose bottoms were worked loose. The staples that are listed in every bee supply catalog and sold to fasten bottom-boards to hives are not good for a long trip. The vibrating of the car kept working staples loose, while a few bottoms nailed on with 7-penny nails held. A hive with a loose bottom I had to slide out of the rack and re-nail.

The weather was not overly warm, but the bees were in a constant uproar on cool nights. When the car was stopped in a freight yard, in the sun, the bees became greatly excited. Wetting the car thoroughly helped quiet them. This continued excitement caused them to consume a great amount of stores. On the fifth day I found several colonies had starved, and about twenty starved by the time the trip was completed. The colonies averaged four combs of brood upon being loaded, but nearly every colony had eaten all of its combs of brood by the time they were unloaded. The few colonies that were heavy with honey came through in the best condition.

The bees were unloaded near the railroad at Winnebago and allowed to fly. I bought a sack of sugar and for several days fed each colony a little syrup through the top screen. As I arrived after dandelion and fruit bloom, no honey was coming in, and the bees had to be fed till the 10th of June.

A large tract of basswood timber, two miles east of town, was selected and the bees moved there. Upon going through the bees, I found nearly fifty queenless colonies, many of which had developed laying workers. These queenless colonies I united with queenright colonies. Had I ordered some queens and had them arrive a week later than I arrived, many colonies could have been saved. Most of the bees had worn themselves out in the excitement of being moved, and hardly enough bees remained to care for the new brood. I made every effort to get each colony ready for the honey flow, which local beekeepers said would start about June 20, from white sweet clover, to be followed by basswood early in July. These flows arrived on schedule time, but were preceded by a light flow from yellow sweet clover. The bees were not built up to strong colonies till basswood was through yielding nectar, and as most of the sweet clover was growing along the roadside and not cultivated, it soon went to



The bees loaded on trucks at the end of the long journey.

seed. Cool, wet weather prevailed during basswood bloom and the bees only had five good days in which to gather this honey. Dry weather followed and cut short the clover flow. If stock had been allowed to graze upon this clover, it would have bloomed much longer. The bees averaged 40 pounds of honey per colony, although many made much more.

If this small crop of honey had not been sold for 20 to 25 cents per pound my move would not have paid expenses. As it was, I did not feel jubilant over the outcome. I received letters from Texas that told of the continued drought and of many beekeepers who had lost large numbers of colonies. Many of the farmers had to have State aid in order to survive. This kept me from feeling that I had made a mistake in moving.

After the honey was extracted and sold, I built a 16x16x7 foot house to store all of the supplies in. During the summer I had slept in a tent and stored supplies under a large tarpaulin. A large cellar was next dug and made ready to winter the bees in. As some beekeeper friends agreed to put the bees away when winter really came, I made preparations to "Ford it" back to Texas.

I might say here that the Texas drought was broken by heavy rains that fall. Bees gathered more than enough honey for winter. Everyone looked for good seasons, which they have had since.

As I now look back over my experience in shipping this car of bees, I see where I made mistakes. At the time of preparing the bees and fixtures for shipment everything was done that I knew how to do to make the trip successful. I now realize that where bees are shipped in warm weather, with combs of brood and honey, they should be shipped in iced refrigerator cars , if on the road over two days. This would cause the bees to cluster and keep quiet. Many bees have been shipped successfully in refrigerator cars. At least 20 pounds of honey should be in each colony, and extra combs of honey carried to give the bees upon arrival, unless honey is known to be coming in and good weather prevailing. The bottom-boards should be nailed on with 7-penny nails instead of staples. A box car or a stock car is good to ship bees in, if shipped without brood, in cool weather.

In the spring of 1920 I wanted to ship about 200 colonies of bees from near Brownsville, Texas, to Sioux City, Iowa. The distance and high freight rates caused me to decide to ship three-frame nuclei in lightweight cages. I shipped strong nuclei with an average of one and a half combs of brood and from one comb to one and a half of honey. The bees were shipped by express and went through in from three to four days' time. One nucleus was smashed by the express company and was the only one lost in transit. The bees were given combs of honey upon arrival and built up to strong colonies by July. They averaged 120 pounds per colony, besides honey for winter and spring use. Each colony drew out an average of 25 Langstroth combs. From the outcome of this shipment, I am led to believe that it is cheaper to sell all bee supplies and ship the bees as nuclei by express if they are to go any great distance. Supplies would have to be prepared for the nuclei in advance. If 300 colonies or more are to be shipped to arrive at the beginning of the honey flow, they should be strong colonies and go through in a refrigerator car. This will enable them to be in honey gathering strength when placed in the new location.

Iowa.

## DZIERZON LETTER

We are indebted to Editor Alfonsus, of the Vienna "Bienenvater," for an autograph, signed letter, from the world-renowned Dzierzon, discoverer of parthenogenesis in bees. We are also indebted to C. W. Aeppler, of Wisconsin, for a translation of this letter. We give the letter below. Our readers will notice that Dr. Dzierzon praises his own hive. No one who has used the Langstroth principles of free-hanging frames can for a moment contemplate accepting the bar hive of Dzierzon. But a father is sure to love his son best, and we can only look indulgently upon Dr. Dzierzon's preference, and admire his wonderful experiments and discoveries with so inconvenient an implement.

The letter is without date, but it must have been written some 40 years ago, if we judge by the yellowness of the paper and the faded appearance of the ink. Dr. Dzierzon has been dead 15 years.

### The Dzierzon Hive

By Dr. Dzierzon

The most practical and at the same time the cheapest movable-comb hive is without a doubt my twin hive. Many will imagine in this new home for bees something very elaborate and costly, while as a matter of fact it is simplicity itself, and through this simplicity I see only the greatest possibilities for the future. Its practicability will be substantiated by its many good points, of which I will tell in future articles, but for the present will describe its manufacture, which also goes to show how simple it really is. I believe that I can do this most clearly by comparing it with some other good movable-comb hives.

At the time that I was pursuing my university studies at Breslau, my attention was called to an article in bee literature by one of my colleagues who was also an interested beekeeper; this article arousing my keen interest. The work of the Englishman, Stutt, was announced, who had patented a hive that was claimed to give a surplus of 100 pounds of honey in a single season. Immediately a sample was purchased. The Stutt hive was quite practical. It consisted of a large box in which was a compartment for the brood and the wintering of the colony, and two compartments half as big on the gable sides. This must be called quite practical, since on either side of the brood-chamber is a convenient place to have the extracting combs. But the price of this hive was enormous, more than twice as much as my twin hive. One twin hive will entirely replace two Stutt hives, the latter consisting of 6 pieces. Each of the two compartments furnish in the center the brood-nest, which usually consists of 8 combs, and on either side the surplus compartments in which there are 4 combs each, or together there are 16 combs. These furnish an inner depth of 60 centimeters. The twin hive, however, on account of its mobility, stands forth as a practical home for bees—something that one cannot have if he uses a house-apiary. Four pieces of plank or two pieces of lumber ordinarily used for sills will make 3 or 4 twin hives ready for use, the only other thing needed being the cover, which consists of tin properly shaped and fastened. On account of the unobstructed daylight, and the unlimited room for a hive-stand in using this hive, it is a real pleasure to work with the bees, whereas in a dark house-apiary it is a veritable torture. He who adheres to the use of house-apiaries, which the Americans do not recognize, will never accomplish very much in beekeeping. My motto has, therefore, always been do away with house-apiaries!

Dr. Dzierzon.

## FIR SUGAR AGAIN

I was very glad, indeed, to see the photograph of fir sugar in the last number of the American Bee Journal. I have just read Davidson's note and should like to call attention to one or two of his remarks. I am unable to say positively without further information whether the sweet substance gathered at Victoria was an excretion of Homoptera or of the leaves of conifers. The beekeeper, however, states that it was gathered mainly from the Douglas fir, chiefly from isolated trees; it was stored in mid-summer, the dryest and hottest time of the year; and the "honey" seems to have been similar to that stored from the Douglas fir. There certainly seems reason for thinking that it may have been an exudation of this tree. It is not altogether safe to lay down too rigid rules for the behavior of either plants or animals. Manifestly it would be an absurdity to imagine that the substance was a resin, since bees would not gather two or three supers of it in sections and cap it over, neither would it have a fair flavor.

I fully agree that fir sugar should not be called honeydew. I would restrict the use of this word to the sweet exudations of insects gathered by honeybees.

Maine. John H. Lovell

"It is really disgraceful for such a country as ours to import wax or honey. We ought ourselves to export thousands of tons of each every year." (American Bee Journal, December, 1871.)

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THE STAFF
C. P. DADANT ............................Editor
FRANK C. PELLETT ..................Associate Editor
MAURICE G. DADANT ...............Business Manager

(Copyrigbt 1921 by C. P. Dadant.)

# THE EDITORS' VIEWPOINTS

### Belgium Appreciates

As an evidence that the Belgian Government appreciates the modest efforts made by our beekeepers to help the French and Belgian suffering beekeepers, our editor was awarded the "Order of the Crown of Belgium" by King Albert. While thankful for this honor, he realizes the fact that this recompense was earned by the concerted action of the numerous subscribers who sent their share of the Good Samaritan fund since October 1919. Each of you, friends, is therefore entitled to a share of the credit.

### Good Samaritan Fund

| | |
|---|---|
| Statement April, 1921 | $17.00 |
| E. M. Cole, Audubon, Iowa | 1.00 |
| Total of last subscription | $18.00 |

This last amount was forwarded, as before, one-third to Belgium, two-thirds to France, on May 5. The amounts were 74 francs to Belgium and 149 francs to France, the remittance having been purchased before the rise in value of the francs. In a few months we will be able to give a statement from the committee in charge. The totals sent by us were all published in the American Bee Journal from time to time.

### Too Much Pollen

The May number of the Swiss "Bulletin de la Societe Romande" contains an article by Jules Comtat, complaining of too much pollen in the hives in the spring, some colonies filling two and three combs, especially if empty combs are given them to increase the breeding space. We have often seen too much pollen in queenless colonies, but never in queenright colonies when they are breeding heavily. This must be a question of locality.

His remedy is to place the combs of pollen in a tub of water, held down with a weight, for two days, then wash the pollen out with a spray pump and put the combs in the air to dry.

### Unfair Discrimination

In the May number of the Western Honeybee, F. W. Redfield calls attention to the fact that market quotations do not deal fairly with honey of similar quality from different sections. He mentions especially the white alfalfa honey of the Rocky Mountain region, which is light in color and of good quality, but which is quoted at prices similar to Hawaiian and Imperial Valley honey of inferior quality.

There is no apparent reason why such a difference in price should prevail as market quotations indicate. Southern beekeepers make similar complaint, stating that their white honey, which is equal in quality to the best, is quoted on a basis little if any above the dark and poor quality produced in the same region.

We suggest that right here is an opportunity for the National Honey Producers 'League to render a real service to beekeepers living in regions where discrimination is the rule.

### Drone-Laying Queens

Huber ascertained that the queens who become drone-layers, whether superannuated, or rendered drone-producing through retarded impregnation, never take offense at the building of queen-cells. He tells, in his Twelfth Letter, of experiments made upon such queens, and also upon queens which have been deprived of one or both of their antennæ. The removal of one antenna, from either queen or worker, has no ill influence upon them; but if they are deprived of both, they become absolutely worthless and incapable of doing anything. Probably no observer has made as many experiments upon this subject as Huber did.

It is a strange fact that a drone-laying queen will pay less attention to queen-cells or young queens than even a virgin, for the first thing that a virgin queen does, when she emerges from her cell, is to seek other queens, whether in the royal cells or at liberty, and try to kill them.

The fact that a colony will rear a queen, when the old mother is still alive in the hive, and that the young queen will become fertile and will lay eggs, sometimes for several months, while the old queen is still present, indicates that a fertile queen pays, also, little, if any attention to a superannuated queen. But how do they know whether their rival is or is not a drone-layer?

### Imports and Exports of Honey

It is not a bad plan to see ourselves once in a while from the viewpoint of others. It is also desirable that we should understand that others are suffering from the very troubles which we notice in our own selves. Lack of union, lack of understanding, and especially international ill will, are causes of depression in prices. The following report, abridged from an Italian statement, shows us for the first time a fair statement concerning United States honey. When it comes to commerce, each country seems to consider all other countries as enemies

### An Italian Statement Concerning Honey Imports and Exports

The market of honey, which ought to be regulated in a modern way by the Bee Associations, is constantly in the position of an interrogation point, the avidity of the producers and the want of precise information are the causes of the prevention of the regularity of the market.

The statistics of the Ministry of Finances illustrates the movements of Italian exports and imports of honey in the nine years from 1911 to 1920.

| | Imports | Exports |
|---|---|---|
| 1911—Quintals | 1037 | 2825 |
| 1912—Quintals | 1152 | 2090 |
| 1913—Quintals | 2120 | 3070 |
| 1914—Quintals | 743 | 2868 |
| 1915—Quintals | 228 | 6944 |
| 1916—Quintals | 741 | 325 |
| 1917—Quintals | 11822 | 17 |
| 1918—Quintals | 12877 | 49 |
| 1919—Quintals | 1284 | 19 |

It will be noticed that, while the average of importation of honey annually, previous to the war, was about 1,000 quintals, during the years 1917-18 it was about 12,000 quintals.

We have now returned to the annual average of importation of 1,200 quintals. But it is to be noted that, while before the war Germany was the principal country which supplied us, now the first place is held by North America, especially by the United States, where beekeeping has taken great development. Neither is it correct to say that that country produces only inferior grades of honey; it also produces table honey of the very best quality, for direct home consumption.

### The Little Bees

This is not beekeeping, but it is entitled to a place, gratis, almost anywhere:

Les Petites Abeilles (The little bees), under the patronage of Princess Marie-Jose, of Belgium, announces that, in a few days, they will inaugurate their Sanatorium for rachitic children of 16 months to 6 years, at their country seat of La Chise a Pietrebais, Brabant, Belgium, and they hope that notice will be taken of this by charitable people who will take to heart the co-operation for the cure of rachitic childhood. Gifts of any kind will be welcome, at the Sanatorium Des Petites Abeilles, at the above address.

### Translations of Huber

Most of our beekeepers know what an immortal observer Francis Huber was and how much his writings enriched the bee literature of a hundred years ago. I have his work, "New Observations," in the original French. Lately I secured the translation which was published in England in 1821. Wishing to ascertain how correct this translation is, I compared the two and found, to my great astonishment, that the 1821 edition of the translation, by an anonymous translator, does not contain more than two-thirds of the contents of the original 1814 edition. It also contains gross errors.

Since then, I secured, for perusal, another English translation, that of 1841, which advertises itself as follows: "The text has been carefully revised and rendered more agreeable to the English idiom than that of former translations." In reality it is a servile copy of the 1821 edition, with the same errors, even including an error by the printer, who had put the words "strange hive" when "strong hive" was meant. The English editions give but 5 plates, while the Swiss edition contains 12 plates.

So, after all, the English and American readers of Huber have had but truncated editions of the admirable work.—C. P. D.

### Utah Honey Producers

Utah has fallen into line and is keeping step with other wide-awake honey-producing States in the march of progress for better methods of marketing honey and buying supplies. A meeting called by the Utah Beekeepers' Association was recently held at Price, and an organization perfected to be known as the Utah Honey Producers' Association. It is a non-profit, co-operative organization for the purpose of marketing the products of the beekeeper and buying supplies collectively. Bids on cans were submitted and an order has already been placed for 24,000 five-gallon cans, one carload of five and ten-pound friction top pails and two carloads of cases, at a considerable saving to the beekeepers of the State. The order for five-gallon or 60-pound cans will, in all probability, be increased to 40,000 before extracting time. It is the intention to do something in the way of marketing honey collectively this fall.

The board of directors elected to serve until the first regular meeting are Thos. Chantry, of Wellington, who represents the beekeepers' interests on the State Board of Agriculture; M. J. Stewart and C. T. Beggs, of Myton; Wm. McKenzie, of Ferron; Andrew Vernon, of Vernal; Wilford Belliston, of Nephi, and R. T. Rhees, of Ogden. The office and storehouse of the new association will be at Salt Lake City, and C. T. Beggs will attend to the business and act as secretary until the first regular meeting. A constitution was adopted similar to that of the California Exchange.

The outlook at the present time is very good for a big crop of honey for 1921.

Dan H. Hillman, State Inspector.

### A Live County Organization

Vigo County beekeepers are people who believe in upholding the reputation of the State of Indiana and, besides, doing a work which is a benefit and monument to themselves and furnishes the example for better beekeepers.

They have recently finished a five-day field trip which took in all of their county and parts of Park, Clay and Sullivan Counties besides. Stops were made at the apiaries of seventy beekeepers, little and big, during the five days.

Nor have their past and present efforts been in vain, for the county is now practically free of foulbrood and has scarcely any box-hive beekeepers left. The persuasive effect of a group of up-to-date beekeepers meeting in the yard of a more lenient member of the profession more often than not has the desired effect. He is likely changed to the ranks of the progressives.

W. A. Hunter, the efficient President of the association, had the trip in charge.

### Truth in Honey—Truth in Wool

Congress is now considering the French-Capper "Truth in Wool" bill, making it imperative that the manufacturers of fabrics label all materials made as to the ingredients, whether all wool, what per cent shoddy, etc.

The bill has the backing of all wool growers, of all the large tailoring establishments and associations, as well as of many independent organizations. Truly, is there any reason why we should not know the makeup of our clothing as well as the content of our jelly glass or honey bucket. The bill should go through.

### Many Scrubs Are Ousted

According to the latest report, the project leader, sixteen Missouri counties have replaced a total of 156 scrub bulls with purebred sires since January 1. A good hint for every good beekeeper to pinch off the head of that worthless queen today and replace her with something which will at least earn its way.

### Unscrupulous Beekeepers?—Unscrupulous Newspapers

In its issue of Tuesday, May 24, the Philadelphia Evening Ledger criticises a bulletin sent out by the State Department at Harrisburg advising farmers to feed their bees on account of the lack of bloom caused by frost.

The Ledger comments in a semi-humorous vein, coupled with the usual number of mis-statements, among which is the one that beekeepers are sometimes unscrupulous and feed to their bees a syrup made of half glucose and half honey. They suggest, also, corn meal and sweet puddings.

We have protested to the editors of the Ledger, who are located in Philadelphia.

### Field Meets in Iowa

The editor attended field meets in Iowa, June 2 and 3. On June 2 there was a forenoon meeting at the apiary of Mr. P. Mohr, the happy father of 13 children shown on page 139 of our April number. An open air dinner was enjoyed by some 30 beekeepers, with discussions and apiary visits. In the afternoon the meeting was held some 3 miles further, at the apiary of W. W. Myers, an old beekeeper who once lost all his bees by foulbrood, but who picked up courage and now has some 60 healthy colonies and good prospects. Later the editor and Mr. Atkins enjoyed a visit at the Academy of Sciences, of which Mr. Paarman is Curator. It would take pages to describe this. Mr. Paarman, who is an enthusiast, had also arranged a banquet for the beekeepers for the same evening. So the day was well filled.

On the 3rd, an afternoon meeting was held at Muscatine, on the porch of Mr. H. C. Klaffenbach. The editor must acknowledge the charming hospitality of this gentleman's pretty wife, who served an excellent dinner in honor of the two guests from away, Mr. Atkins and himself. At this meeting a very interesting and unusual display was made by Mr. H. W. Clark, of the Fairport fisheries. It consisted of about an ounce of pollen, gathered by hand, upon the cat-tail blossoms (**Typha**) of the fish ponds managed by the Government.

We owe thanks to the County Agents of both these places for arranging the meetings and helping to make them successful.

### The C. C. Miller Fund

It is still time for subscriptions to the Miller fund, for we will have to put off the publication of the list till we get everything together. So we trust the other American magazines who have taken the matter in hand will send us their list at once. There is one list, at least, in Europe, but it may be added later. We will expect the "big guns" of the business to help round up the sum. It will not be too large, at best, but Dr. Miller would be pleased, anyhow, if he could see the effort made.

### Blue Melilot

In our May number, page 195, we spoke of "Melilotus cærulea Pers" (blue melilot), described by Bonnier as grown in Europe as an ornamental plant, and asked our foreign readers for seed of it. We acknowledge with thanks the receipt of a little package of this seed from Mr. A. Zeier, of Lyons, France. We will try it next spring and report, in these columns, in regard to it.

### Dr. C. C. Miller

On June 12th, the Presbyterian Sunday school of Marengo unveiled a large picture of Dr. Miller, with very beautiful exercises. A former scholar of Dr. Miller, Judge E. D. Shurtleff, gave the principal address. I should like to give you a copy of his speech, but he did not have it written.

Mrs. C. C. Miller.
June 13. Marengo, Ill.

# CONTROL OF THE WAXMOTH

## Notes on Fumigation of Combs to Prevent Destruction When Not in the Care of the Bees

By G. H. Cale

Beemoths are most effective destroyers of honeycomb, and it requires care to protect combs, which are not in use, from injury. It is interesting to note that the larvæ of the moths prefer to feed on pollen and on the cast skins and debris left in the cells of the brood-combs, a habit which directs them to the most valuable part of the colony equipment.

Paddock shows (Bulletin 128, Texas Agricultural Experiment Station, "The Beemoth or Wax Worm") that temperature greatly influences the life history of the larger beemoth (**Galleria mellonella**), and the greatest number of generations occur in the South, where the summers are longer and the mercury stays higher on the scale. At least three broods develop annually at College Station, Texas. Some beekeepers in the South report large losses of colonies, due to moth injury, but much of this loss may come after the colonies are weakened from other causes. Where conditions are so favorable for development, greater watchfulness is obviously necessary. In the North, the average life history is longer and at best there are probably seldom more than two generations a summer, although when the summers are especially long and hot, the chance of added generations increases.

### Natural Enemies

The most effective natural enemy of the beemoth is the honeybee itself. It is an axiom that strong colonies of bees will rarely tolerate the presence of moths, but when the bees are not sufficiently numerous to care for all the combs the moths may then infest unoccupied areas. Some races of bees, however, show less of a disposition to rid the hives of intruders than others. It is characteristic of good Italians to clean house thoroughly, and the use of strong colonies of Italian bees is now considered a necessity in the control of European foulbrood. Their value is still further emphasized in the control of the beemoth, since there is no better insurance against the loss of combs from moths than to leave them as long as possible in the care of such colonies.

Moths and moth larvæ are both quickly killed by freezing temperatures, and in the fall, in the North, when the temperature becomes low enough, there is no further danger of moth injury. It is usually sufficient to stack the supers or hives of combs away, tightly covered, until again needed, but where zero temperatures do not occur, some of the moth eggs, at least, will probably live over winter to hatch in the spring. In the South, although the temperatures may be sufficiently low to kill the moths if they are exposed in different stages of their life history, the more protected ones will escape and remain as a constant source of injury.

### Carbon Bisulphide

The most effective control for moths, when combs are not in use and the temperature is favorable for development, is the ordinary practice of fumigation. The usual carbon bisulphide, or "high life," is efficient in its action, and readily obtained. It is purchased as a liquid, but when exposed to the air it volatilizes rapidly as a gas, about two and one-half times heavier than air, which settles rapidly to the lowest possible level. This gas is dangerously inflammable when mixed with air, and often explosive. It is not poisonous, as frequently supposed, but kills by suffocation, and honey with which it comes in contact is perfectly safe to use. The action of the gas is most effective when the temperature is sufficiently high to allow rapid evaporation of the liquid and it is therefore obviously most effective in warm weather, which is also the time when moths are the most active.

Combs to be treated may be left in hives or supers and the latter piled in stacks. To prevent the escape of gas, the bottom body should be set in an inverted hive cover on a newspaper so arranged that a tight joint is made. The edges of the hives should be scraped to remove propolis and other adhering materials, and the remaining spaces due to unevenness may be closed easily with refuse wax, or with mud. A measured amount of carbon bisulphide is poured in a dish set on the frames of the top hive. A large, flat dish is preferable, since it exposes a considerable amount of the liquid to evaporation. An empty hive or super, set about the fumigant and covered tightly, completes the operation. If care is used, the gas may be confined for a long time.

Carbon bisulphide is placed in a shallow pan in an empty super above the combs.

Paddock found that the moths were killed by carbon bisulphide in 15 to 20 minutes, but that pupae and protected larvæ required a period of some length. With the dosage he used the eggs were not killed. Heavy doses will probably kill the eggs, but it is not generally considered practical or economical to use large amounts of the fumigant. The usual incubation period of the egg is 7 to 9½ days, and the newly hatched larvæ do little damage until they reach the midribs of the combs, which requires a minimum of about four days. A second examination at the end of ten days or two weeks, therefore, will show what combs need a second dose. A third fumigation is not necessary as long as the stacks remain tight.

### Amounts to Use

The following are approximately the amounts of the bisulphide recommended by Paddock:

For 10-frame Langstroth hives—1 ounce to each 3 hive-bodies.

For 10-frame shallow supers—1 ounce for 5 supers and one-quarter ounce additional for each super thereafter.

For large hives, such as the Dadant or Jumbo, one-half ounce is sufficient for each hive-body. Where 6-inch extracting supers are used, two supers are equivalent to one large hive. Since these amounts supply gas sufficient for the space inside the stack, the empty protecting hive-body or super on top is included in the count.

### Sulphur

Sulphur, or flowers of sulphur, is sometimes used as a fumigant, but it is not as effective as the bisulphide. In this case the material comes in lumps, or as a powder, which is burned, forming a suffocating gas, sulphur dioxide. The sulphur must be burned at a high temperature to be most effective, and the better protected forms of the moth requires exposure to large amounts of the gas for a considerable time before death occurs. The gas is most effective in the first five or six hours, and the fumigation is practically complete in ten to twelve hours. The eggs are not affected.

Since the gas is considerably lighter than air, it rises as far as possible, and the sulphur must therefore be placed beneath the combs which are to be fumigated. The stacks should be as tight as for the bisulphide treatment and the dish containing the sulphur may be set in an empty body at the bottom. The sulphur may be burned by putting it in a dish that is not held together with solder and setting the dish on a brick or a pan of cold ashes to prevent burning the floor. Sulphur is cheaper than bisulphide, and it is not necessary to economize in its use. In fact better results are obtained by using excessive doses. Sanitary entomologists have a standard of 4 pounds to 1,000 cubic feet, where the enclosure is not air tight. Figuring this down to the beehive, one and one-half ounces of sulphur will be sufficient for each tier of ten hives. Sulphur in proper amounts may also be burned in a room which is tightly closed and the hives of combs well exposed to the fumes.

### Paradichlorobenzene

This strange looking language names a chemical which is coming into prominence as a fumigant and promises to be effective against the beemoth. The gas given off is heavy and non-poisonous and is not inflammable, which makes it 100 per cent safe. It is obtained in flakes similar to naphthalene flakes, and is used in the same way as bisulphide.

### Carbon Tetrachloride

This chemical is also a liquid which quickly evaporates as a heavy, suffocating gas and is sometimes recommended as a fumigant. However, it is not effective against the beemoth. L. R. Watson, of Texas, who is a good chemist, experimented with it to some extent, but was unable to kill the moths in the usual confinement of tiered hives, even with large doses of the gas. The gas is considerably heavier than carbon bisulphide and, while it tends to suffocate the moths, and probably does kill many larvæ and pupæ, the higher levels of air are so free from it that the adult moths collect in the upper parts of the tiers and thus escape injury. Large quantities of the gas, used in an absolutely air-tight space, might be effective, but this would probably require amounts of the tetrachloride, which would make the process more expensive than the use of bisulphide.

### Hydrocyanic Acid.

The most effective of all fumigants is produced when potassium cyanide reacts with sulphuric acid to form hydrocyanic acid gas, and there is no doubt of its ability to kill beemoths in all stages almost at once. Unfortunately, however, every other form of life that breathes it is also killed, and only a chemist or a fumigant expert should handle it. It has a prominent use against insect pests of many plants, but requires tight containers to prevent the escape of the gas.

It is interesting to learn that one of the chemists of the United States Department of Agriculture tested its use with combs of honey and found that when four ounces of cyanide were used to 100 cubic feet of space, a dose four times greater than that given dormant nursery stock, sealed honey absorbed none of the gas. Uncapped honey absorbed about 21 parts of the gas per million, but after exposure to the air for 24 hours there were only 2.4 parts per million remaining. After standing for two days the uncapped honey was safe for consumption.

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## A SUBSTITUTE FOR ROYAL JELLY

By J. A. Nininger

Those who have reared queens realize how difficult it is at times to secure royal jelly. It has been a question in my mind whether the larvæ deposited on such small quantities of jelly find proper nourishment at the start. I have adopted a simpler method and one which, according to my experience, gives as good results, if not better.

I prepare the cell cups as usual, but instead of putting a bit of royal jelly in each cell, I put in a drop of honey from a comb filled with unripened nectar. For this purpose I use a match or toothpick. Any small stick will serve.

For grafting, I select a comb with larvæ of the desired age and shave it down to a very shallow depth. Larvæ from 12 to 24 hours old are selected.

I have found this method so simple and satisfactory that I have abandoned the use of royal jelly altogether.

Kansas.

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## DISCOVERY OF THE ACARINE MITE

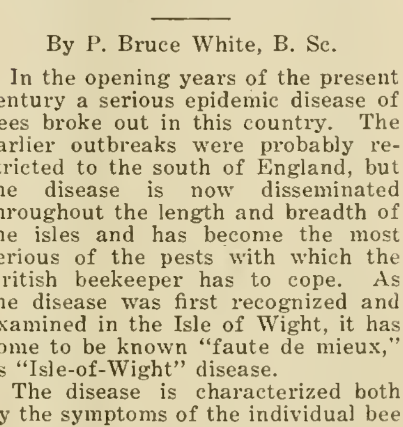
### An Account of the Investigations relating to Isle-of-Wight Disease

By P. Bruce White, B. Sc.

In the opening years of the present century a serious epidemic disease of bees broke out in this country. The earlier outbreaks were probably restricted to the south of England, but the disease is now disseminated throughout the length and breadth of the isles and has become the most serious of the pests with which the British beekeeper has to cope. As the disease was first recognized and examined in the Isle of Wight, it has come to be known "faute de mieux," as "Isle-of-Wight" disease.

The disease is characterized both by the symptoms of the individual bee and by the disorganization of the communal life of the hive.

The onset of the disease in a stock may be marked by various premonitory symptoms. The foraging bees, leaving and returning to the hive, may show a certain listlessness, lingering before the hive. Presently the first crawlers appear, bees which, incapable of flight, crawl aimlessly on the ground. As the disease progresses the number of crawlers increases, and on warm days hundreds of stricken bees may be seen before the hive. The disease may run a varying course; it may progress steadily till the depleted and disorganized stock perishes or may wax and wane, often showing signs of periodicity. In badly affected stocks the routine of the hive is upset, foraging is half-hearted, the hive becomes soiled with feces, the brood may be neglected, and the bees no longer withstand robbers, which enter with impunity. It is seldom, if ever, that a diseased stock survives the winter.



Fumigating combs in a tight stack of hive-bodies.

The stricken bee falling to the ground in its attempt to fly from the hive may, for a short time, perform a series of short flights, a few feet in length, but eventually it takes to crawling. In some cases there is dislocation of the wings; in others there is dragging of the legs. Death is probably due to cold and starvation. The abdomen is usually found distended by an accumulation of fæces in the intestine, which is filled to the limit of its capacity.

In 1907 Imms reported on the disease, but made no suggestion as to its cause. He laid stress upon the intestinal symptoms. His work was followed up by Malden, who was of the opinion that the site of the primary disease was in the chyle stomach, and suggested that an organism, called by him bacillus pestiformis apis, was the causal organism. In 1912 Fantham & Porter held that the disease was due to the microsporidian parasite, Nosema apis, mainly attacking the chyle stomach. This view quickly gained acceptance and "Isle-of-Wight" disease was considered identical with "Bee microsporidiosis" and "Nosema disease." Later this theory was called in question by Anderson, of Aberdeen, and then by Anderson and Rennie. Following up this work, Rennie and Harvey showed the existence of two distinct diseases of the bees, Nosema disease and Isle-of-Wight disease, each having its own symptom-complex.

A special joint committee of the University and College of Agriculture of Aberdeen was formed and with funds provided by A. H. E. Wood, Esq., of Glassel, Aberdeenshire and the Development Commissioners, the search for the cause of Isle-of-Wight disease was renewed under the direction of Dr. Rennie, of the Parasitology Department of the University of Aberdeen.

In June, 1919, the writer joined the research to attack the problem on the bacteriological side in Professor Shannon's Pathological Department.

An interesting excursion was first made into the normal bacteriology of the bee which brought to light some interesting facts in the bacterial bionomics of its intestine. The bacteriology of Isle-of-Wight bees was then taken up, but after much work no clue as to the causation of the disease was forthcoming.

In May, 1920, however, the writer,

while examining atrophied muscle fibres from the thorax of a diseased bee noted a number of oval bodies within a fragment of a tracheal tube included in the same preparation. These bodies proved to be acarine larvæ.

Examination of the thoracic tracheæ of other crawling bees showed certain of the major tracheæ to be extensively obstructed by mites in all stages of development, from ova to adult forms.

An examination was made of 150 bees from several diseased stocks and the parasite was found in every case. One hundred apparently healthy bees from apparently healthy stocks were also examined and the parasites were absent in 95 per cent.

With these data to hand, the writer reported his observations to his colleagues and advanced the theory that this parasite was the cause of Isle-of-Wight disease.

At the same time he learned that a solitary mite had been seen in the trachea of an apparently normal bee by Dr. Rennie and Miss Harvey in the previous December, but no causal relationship was then suspected.

Dr. Rennie, Miss Harvey and the writer then commenced a routine examination of a large number of diseased and healthy stocks involving the examination of upwards of 3,000 individual bees.

The results of this work may be summarized as follows:

1. The mites were found present in every stock exhibiting symptoms of the disease, and in every crawling bee.
2. The mites were absent in the great majority of apparently healthy bees from apparently healthy stocks (approx. 80-90 per cent of those examined between May and October, 1920).
3. In approximately 35 per cent of seemingly healthy stocks derived from the British Isles, a varying, although usually low, percentage of infection was present. A number of these stocks kept under observation later developed the disease.
4. No mites were discovered in samples of bees sent from the Continent.

The results, therefore, strongly support the view that the mites are a "sine qua non" of the disease.

Dr. Rennie, after a systematic study of the parasite, has relegated it to the genus Tarsonemus, giving it the specific name, T. Woodi (nova spec.) in token of gratitude for the interest and support of Mr. Wood throughout the investigation. Dr. Rennie has further made progress with the study of the life history of the mite.

The writer took up the pathology of the disease.

The parasites were found to enter the bee through one or both of the first pair of spiracular orifices and apparently through these alone. They remain located in the system of major tracheæ and air sacs of the anterior moiety of the thorax and in the vessels of the head—these latter being less frequently invaded. No mites have been found in the respiratory system of the abdomen.

In the earlier stages of the attack the microscope reveals the almost colorless ova and embryos lying within the lumen of the otherwise normal trachea. The parent mites may usually be found in their vicinity.

As development proceeds, the tracheal lumen becomes markedly obstructed and the wall becomes encrusted and bronzed with fæcal deposits. In the later stages this color generally deepens to black.

The affected tracheæ now appear deep brown or black to the eye. They have lost their elasticity and have become hard and brittle. This is the condition found in the majority of bees crawling from the disease.

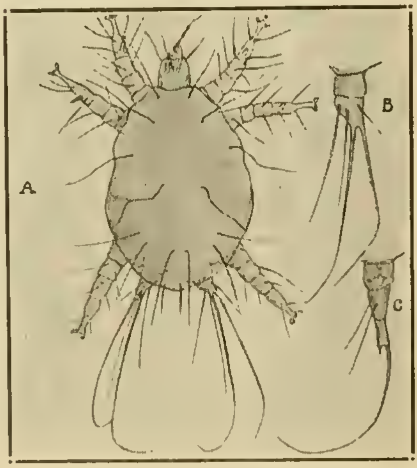
In a high percentage of Isle-of-Wight "crawlers" atrophic changes of the thoracic muscles of flight occur. As a rule only a few fibres show marked changes. The affected fibres are white, thread-like and brittle, thus contrasting with the flaccid greyish-yellow normal fibres. There is advanced wastage of the fibrillar substance, loss of fluid and condensation of the granules of the fibre. The atrophied fibres are frequently reduced to one-half the normal width during relaxation. It seems probable that such fibres are dead; they are certainly functionless.

Occasionally the black spots develop in the muscle fibres of infected bees, but their causation is not yet definitely elucidated.

The examination of the alimentary and other systems has revealed no other characteristic lesion associated with the disease.

The primary effect of the mites upon the bee has a double aspect. The parasite living and developing at the expense of the body fluids of the bee must threaten nutrition. Possibly, too, they are actually venomous. The actual importance of this active injury is, however, a matter of surprise.

In the second place, there is the partial or complete obstruction of certain of the thoracic tracheæ by the parasites and their products. The importance of this passive factor is much more readily estimated. In the great majority of crawling bees the effective lumina of certain major thoracic tracheæ are reduced to the lacunæ between the closely packed parasites and the air which filters through must be depleted of oxygen by the mites themselves. The organs which are supplied by such tracheæ must suffer from oxygen starvation.



A. The acarine mite. B. Fourth leg of female. C. Fourth leg of male.

Among the organs of which the respiratory exchange is thus endangered are the thoracic muscles of flight and the cerebral ganglia.

With this in view, a series of controlled experiments were made upon normal bees in which one or both of the first pair of spiracles had been closed with wax. A condition of crawling closely simulating Isle-of-Wight disease was produced, and in a few days muscle atrophy identical with that found in diseased bees appeared in many cases.

These experiments support the view that mechanical blocking of the tracheæ is a factor of great importance—perhaps capable in itself of occasioning all the symptoms by which we are wont to recognize the disease.

Through the impairment of the respiratory exchange of the thoracic musculature and the cerebral centers the power of flight is lost, and with loss of flight a series of secondary conditions arise. The fæces, normally voided on the wing, are retained and accumulate, compressing the abdominal air sacs—another blow at the respiratory function.

It is probable that toxins are absorbed from the stagnant gut and that excretory stasis in the Malpighian tubules is reflected back upon the body of the bee.

Once the flightless bee leaves the hive, unable to return, it perishes from cold and starvation. Should it remain it is faced with the condition of functional stagnation which cannot be infinitely maintained.

It is impossible in this condensed paper to touch on several important matters, as for instance the transmission of the disease and its seemingly insular distribution. Certain details have been omitted, together with such matters as the special characteristics and life history of the parasite, of which others can speak with greater authority than the writer.

It would now seem advisable to replace the rather meaningless term Isle-of-Wight disease by the term "Acarine" (or mite) disease. This is not likely to lead to confusion for, though several species of mite are known to occur on bees, T. woodi alone appears to be associated with pathological phenomena.

Scotland.

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## PEDDLING HONEY

By Patrick J. Murphy

Interesting indeed is the article in the January issue, from Mr. Wesley Foster, concerning marketing of honey and the profits taken by honey peddlers.

The producer forgets that the percentage of profit that the average vender of honey takes is less by far than that of the retail merchant. I am speaking of averages.

The consuming public get their honey at a lower price from the house-to-house honey peddler than the same thing can be secured from the average grocer. The reason for this is that the vender generally uses the kind of containers that the grocer would not accept. Then, again, the housewife who buys from the grocer a tiny glass of honey and pays perhaps 25 cents, will take two or three times as much honey from the honey peddler at a less price. The honey peddler centralizes his energy upon the one item—honey—and usually, if he makes a sale at all, it is more than Mrs. Housewife buys from her grocer.

I have found that the great trouble is, there are not enough peddlers. Moreover, there is a decided scarcity of **good** honey peddlers. Men who have salesmanship to any great degree generally get into something more lucrative than the peddling of honey. It is an exceedingly interesting line, just the same. Really, it's a pity that more men do not avail themselves of the opportunity offered in the sale of extracted honey from house to house.

It's a burning shame that the public is so ignorant of honey.

Many still believe that honey is manufactured to some degree.

If ever a commodity needed advertising , it is honey; yet it is the most difficult food product to bring to the attention of the American public.

The Chinese herb doctors, so generally known in the west, use a great deal of honey in compounding their herbs, of which they make claim to numerous cure-alls. Whether or not there are any real cures in their concoctions, these Oriental medicine men seem to think so.

Anybody with a little business sense can get into the honey business, at least in a small way.A good way is to select some place on the highway where motorists are passing. It's in the average person to want to buy any food product in the country. They like to do it. Simply put honey up in jars, bottles or pails and stick up a sign with the word "HONEY" on it, and you will find people will stop and be glad to purchase. It is well to select some wide portion of the highway, so that parties who stop to purchase do not block the way.

One man I know, who has sold honey for years, and who is a success as a vender, has one kind of dark honey that he sells as "wild honey." He has a class of trade who want to buy the wild product, and he does his best to satisfy them. Whether or not this is a wise thing to do, I cannot say; however, all honey is more or less wild, so to speak.

As honey seeks a lower market level than it has during the last few years, the sales will increase, beyond doubt; yet we must all bear in mind that every little bit of advertising we can give any honey is good propaganda.

And do not begrudge the other fellow a profit, for, as Mr. Wesley Foster says, "The honey peddler is doing a missionary work."

California.

## ECONOMY IN THE PRODUCTION OF QUEENS

### Part III.—A Stock Hive for Supporting Baby Nuclei

By George D. Shafer

For years Mr. Wing mated queens from twin nuclei made by separating the standard 8-frame hive into two equal parts by a tight lengthwise division board, using two or three Hoffman frames in each nucleus. He tried smaller frames, too, however, and gradually began to gain experience with baby nuclei.

In "Simplified Queen Rearing" Mr. Pratt has a paragraph in which he mentions special chambers (holding sixteen small combs stocked with a full colony and used "for the purpose of securing brood and honey in small frames." Following the suggestion made there, Mr. Wing tried out a similar hive, and he has developed its use to the point of making it a very essential factor in the successful maintenance and manipulation of baby nuclei throughout the season. This stock hive is made up of units or bodies each 18½ inches long, by 8½ inches wide by 6½ inches high, inside. They are open at top and bottom so that they may be tiered up like the ordinary hives of today. Separate top and bottom boards are provided, and the entrance is at one end. The small frames for brood and honey are suspended crosswise of the length of the hive, and supported in the usual way by tin rabbets set into the top sides of the hive body, a one-fourth inch bee space being left above and at the ends of the frames. The top bars, sides and bottoms of the frames are made of the same size wooden strips, viz.: one-fourth inch thick by three-fourths of an inch wide. Each hive unit will hold 17 frames properly spaced. The length of the top bar of the frames is 9⅛ inches, so that they may be used directly in the baby nuclei twin mating boxes described by Pratt in "Simplified Queen Rearing," and supplied for the past several years by dealers in bee supplies. Instead of the separable wood and fiber covers supplied with the older boxes, however, Mr. Wing prefers a box equipped with a light, double wooden cover made to handle all in one piece. The usual enamel cloth, over the twin box, tacked to the top edge of the division board, is used under this wooden cover.

The advantage of the stock hive lies in the ease with which transfers may be made between it and the nucleus boxes and vice versa. Strong colonies are kept in the stock hives and two, three or four of the long bodies are tiered up as needed to accommodate the colony. Quite strong colonies are needed, of course, for drawing out the new combs and filling them with honey, and for supplying a large amount of brood through the season. During a light honey flow, when the little cluster of bees in the baby nucleus cannot gather enough food for its own use, the stock hive will still be storing a surplus, and this surplus may be drawn on at any time to supply the nucleus with stores, frame for frame being exchanged. Thus the feeding of syrup in the nucleus may usually be avoided by this plan, so that time is saved and danger from robbing is reduced to a minimum. If feeding of syrup should become necessary, it is much safer to feed the strong colony in the stock hive, and then give the filled or partly filled combs to the nuclei.

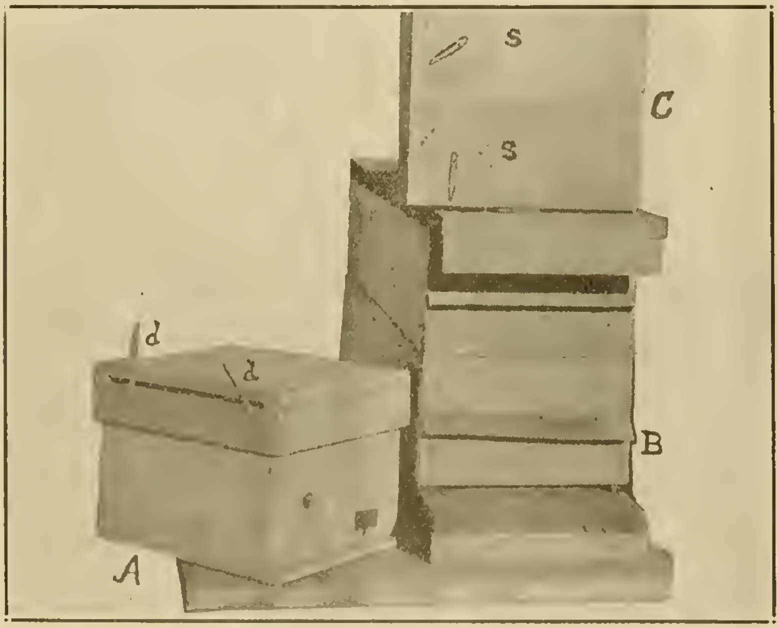
But a further and even greater advantage of the stock hive comes about from the fact that it always contains abundance of brood for easy interchange with the baby nuclei during the queen rearing season. It often happens that a nucleus becomes weak in bees—a frame of hatching brood from the stock hive will quickly recruit it. Furthermore, if a virgin is lost on her mating flight (or in any other way) all brood in the nucleus may become sealed or even emerge before the next virgin, accepted by this particular nucleus, is ready to make her mating flight, and in that case practically all the bees in the little colony may sometimes swarm out with the virgin as she leaves the mating box. This causes confusion and may break up the nucleus. Practically all such trouble may be avoided by supplying any such nucleus that may need it with young brood from the stock hive at the time a virgin or ripe queen cell is given. This young brood will hold the attention of the bees in the little nucleus when the virgin leaves on her mating flight.

It must be noted that the "swarming out" of a baby nucleus with a virgin does not correspond in any way to "swarming out with a laying queen," which is prone to happen in case of baby nuclei during a honey flow, when the newly mated queen quickly fills the little frames with eggs. Swarming out in the latter case can be prevented only by removing the young queen as soon as she begins to lay, or by confining her with a queen excluder for a few days until she may be sold or used otherwise.

The stock hive, therefore, as the name implies, is the stock or storehouse , or mother colony—ready at any time to supply all the wants (outside of virgins or ripe queen cells) of a number of baby nuclei. Such a hive will support 15 to 25 baby nuclei, according to the strength of the colony and the character of the honey flow; and it certainly makes for success in the management of baby nuclei for economic queen production.

A study of the various methods of queen rearing, found in literature on beekeeping, shows that in every case an attempt has been made either to imitate, with more or less success in an economic way, the situations and accompanying conditions that normally lead to natural queen rearing by the bees, or to take advantage of these as they arise. Three situations of this kind are known. The first of these relates itself to the various conditions which together generate the swarming impulse; the second, to that condition of decline or gradual failure of the reigning queen which leads to supersedure, and the third situation is presented by removal or loss of the queen from any cause, when eggs or young larvæ are present in the colony. The loss of the queen may happen to a colony at any time, of course, in season or out of season, but the attempt to rear a new queen is most apt to be successful when the loss occurs during a honey flow; it is least apt to end successfully under the conditions attending a dearth of nectar and pollen. The first two situations normally come about only during a honey flow, queen cells for swarming being usually built during the early part of a major flow. or perhaps at the height of the flow; and supersedure cells, during the latter part of the flow, when the queen may have become exhausted. A "honey flow" and those conditions which always accompany fresh nectar and pollen in the hive, are therefore of the very highest importance for the production of large fertile queens. It is, perhaps, needless to say that these same conditions are likely to insure also the presence of well fed drones in the queen rearing yard. When many queens are to be reared, it is best to make the operations continuous over a long period, and on that account a location is desirable where a long flow of nectar may be expected in connection with a fairly continuous supply of pollen. No shortage of pollen is likely to be experienced, but at times, in some locations, it happens that the bees do not gather enough pollen, even when a surplus of honey is being stored. A scant flow of nectar may be supplemented by feeding, but all pollen must be brought in by the bees, and unless at least a little pollen and nectar are coming in it is very difficult, if not impossible, to rear the best of young queens. The pollen is necessary as a food to keep the rearing of brood of all kinds in progress during the season; the supply of royal jelly will be scant if the amount of pollen available to the nurse bees is too little, even though sufficient nectar may be available. Forty-five to fifty-five per cent of the constituents in royal jelly has been found to be nitrogenous in character. The ultimate source from which the nurse bees must elaborate all this nitrogenous or protein portion of the jelly is pollen. Conditions of this kind pertaining to the food supply have been taken into account in the management of the Wing yards. Sometimes, in order to keep both pollen and nectar coming in over a long period, it has been found necessary to carry on the work in one locality during the first half of the summer and then move the entire queen-rearing outfit to a different location where a "honey flow" was available for the remainder of the summer and fall, and this practice also has been made to yield economic results.

Physiology Department, Stanford University, California.



A. Twin baby nucleus hive. B. Stock hive. C Nucleus cover on edge, showing day and month signals at S.

## SOME NUTS FOR THE LEAGUE TO CRACK

By E. G. LeStourgeon

Can the interests of Colorado and California, and the interests of Michigan and Wisconsin (both producers of high grade honeys and both seeking a market) be harmonized?

Are their interests antagonistic?

Should the large producer, already established, boost the game of a competitive beginner or novice?

If certain supply interests are antagonistic, have they sufficient ground of common contact to make co-operation possible?

Is it advisable to have a large voting membership, or a small representative group?

Will it pay dealers in honey to cooperate to the extent of giving their competitors real information as to markets, supply, prices, etc.?

Can the difference in the grades and flavors of honey from diverse districts be harmonized?

Most of us live in the past. Some men live in the present, but a very few have the rare gift of being able to live in the future. That group of men which gathered in Philadelphia so many years ago, lived not under the rule of King George, but lived under the government of the United States, lived through the constructive days of Washington, Madison and Jefferson, through the days of Lincoln and Lee; through periods of prosperity and financial despair; through the World's War, and live even yet. As they planned so long ago, so it has come to pass. We plan, we invest, we vote, as if the world were fixed and dead; as if progress in method of government and business did not exist.

Throughout the history of beekeeping, and especially after that time when men sought to better their conditions by association, a few have been able to see in terms of the future, a few have been able to think in nation-wide terms, but those who were associated with them were men who dealt only with yesterday, believing that tomorrow would be the same as today.

The men who last January met at Kansas City and wrote the aims and objects of the American Honey Producers' League wrote better than they knew. Meeting as they did at the psychological moment of the century, they voiced the future. Their utterances sound more like opiate dreams than prophecy. So did the preamble of the Declaration of Independence to weak-kneed colonists who believed that they could live and reform George III.

The findings of the League have been condemned as visionary and even idiotic by the conformists, and justly criticised by its friends. Not a word or phrase is there in tentative constitution of published objects that has not received the attention of some critics, constructive or destructive.

These articles of organization have been judged by the ethics and business principles of yesterday. Dire predictions, made by many, will surely come if things remain as they are, but just a year has shown that the trend of the whole world is toward co-operative work. True it is that nature, sentiment and belief cannot be forced, as is evidenced in the failure of many attempts to instantly cooperate units unrelated in any common cause.

In order that we may discuss these objections advanced by critics and give the plans of the League, let us take them up in the order in which they are assailed.

**Harmonizing Sectional Interests**

Can the interests of Colorado and California, the interests of Michigan and Wisconsin, all producers of high grade honeys and all seeking a market, be harmonized?

Emphatically, these interests cannot be consolidated or harmonized on the present business status. The League is larger than any state or group of states. It can see the consumers' world as a whole. It can see that if all the honey of these states is rushed to some marketing center, price cutting, market stagnation and strife will continue. If the yield of honey is great or the number of beekeepers increase the inevitable result is the lowering of prices. What is the result? The beekeeper is starved out; gives up and quits. If he were the only one affected, it would be a matter easily remedied, but he is not, he is a cog in the transmission gear, a broken cog, and the whole machine is out of order. The manufacturer of bee supplies loses a buyer; the bee paper, a subscriber; the can maker, a sale; the railroad, some freight, and so on through a long line of others dependent on bees for a livelihood.

The League cannot press any magic button and quiet the troubled business sea, but it can by the machinery of the beekeepers' association now extant, so change the marketing situation that complete harmony can be foreseen in complete organization. How is the League to do this? By its organization to hold the honey and force the price? No, that would be a trust, would make the beekeeper a profiteer of the first water. The solution offered by the League is to create a demand for the honey. To create a demand that will absorb all the honey offered, to have this demand throughout the States and then so distribute the offerings of honey that there will be no clash of regional interests in some restricted market.

When the demand is created, the supply will determine the price. It must be remembered, however, that the price of honey will always be governed to a greater or less degree by the price and availability of sugar and syrups. To create this demand, the League must advertise and advertise heavily. It must reach the most remote village of the continent. It must place before the housewife all the virtues of honey. It must do this in a way pleasing, convincing and attractive, yet not lavish. But how can the League advertise? Printers' ink, printers' paper, magazine space and billboards cost money, and lots of it. Men capable of carrying out such a campaign are high-priced men, and are worthy of their hire. The League has no money? Its officers are generous, but are not millionaires. The League is not the officers. The League is not the representative of the State associations. The League is the united force and power of every member of every interest or body included in the League. The officers, in handling demands for money, act just as they do in the distribution of honey. Now, there are ten of the most important co-operative honey-marketing associations and several private firms ready to stand behind this movement. Each has its own way to raise funds. Each is ready to raise its fair share. Just as soon as these large associations make the start, the smaller ones will be glad to join. Should all these not be able to finance the movement, an organization campaign will be of greatest value. Let each association decide how to raise its quota, whether by voluntary subscription, assessment per member, per colony, or otherwise.

That extensive advertising will create a wide demand has been proven so many times that it needs no discussion. With this demand comes the greatest problem of the League; one that will require the greatest changes in our present system. To create a demand and not be able to fill it is a triple loss, the loss of the initial sale, the loss of a permanent buyer and, greatest of all, the loss of the buyer's confidence in the firm advertising.

**Better Distribution**

Distribution is our greatest problem. Solve that and the clash of States and of regions is solved. But to solve it, vast and radical changes must occur. Our present system of supply and demand reports must be converted. Instead of wholesalers and commission firms reports, which no one pretends to believe, we must have the managers of the separate associations get a report on honey produced and sold by each member of his association. As such reports are all in the family, as it were, a very true estimate of the supply can be compiled. To get the demand, a new system will have to be devised. The reports will have to come from the stores selling directly to the consumer. This can be done, but remains the big job of the League Secretary. With these two systems perfected, a traffic system can be effected that will give adequate and accessible nation-wide supply.

The League has two sets of problems to solve—internal and external. We have, in a way, touched the high points of our internal troubles.

Outside we have two that demand immediate attention. The first is so close that while it is small, it is an aggravation. Can we give the competitive beginner or novice the benefit of our experience and of our grading and sales system? Our business depends not only on what the buyers think about League packed honey, but about all honey. Let one such novice put a lot of poorly packed, inferior honey on the market, and not only the novice, but we, will be the losers. We can, and must, adopt or regulate these beginners.

Of the minor problems little need be said. They disappear with the solution of the big ones. The question of grading and standardizing honey is one that troubles many. Can the many flavors and colors be marketed on a standard pack system? They can, just as many grades and sizes of peaches or apricots are sold. So can the honey from localities which have large supplies of a certain flavor. This honey should be packed and sold as a named standard. But where there is little supply, even a very choice variety, with the exception of the local market, all honey marketed should be blended and sold as such. It is highly probable that all honeys, including our choicest flavors, should be blended, and often the blend is better than the pure flavor, the New York Globe to the contrary notwithstanding.

The big outside problem is with whom shall we join to get the best service and aid. There are many men of many lines of endeavor who depend as much on the bee for a living as we. The manufacturer of bee appliances and honey containers, of tanks, of bottles and numerous other articles; editors and publishers of bee and farm papers, printers and lithographers, transportation and storage companies, and in a less manner many other lines of business have interests in common with the owner of bees. With these industries allied with us, we can do much more business, and do it in a far more satisfactory manner, than if we are at outs with them.

We most certainly should welcome into the League any interest that has common cause with us.

Our ruling or governing body is a problem in itself. Because of the nature of the work it must perform, it seems advisable to restrict this body to its lowest limits, as we know from sad experience that numbers in legislative halls spell delay and perversion of measures. Where large numbers vote, a man with a glib tongue and an axe to grind often kills or demoralizes the wish of the majority. Let us pick, as the members of the League Council, the shrewdest business men in the bee world and let us keep the representation small. Let each association send one man; a man in whom they trust, in whom they have faith, to represent them, and under the guidance of such a body of chosen men the League cannot help being a success.

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## SUPER CLEANING

By J. F. Dunn

You ask for a description of the Deadman super cleaner and my modification of the same. The ones we have been using for a number of years, except that they are of lighter construction, are substantially the same as those used by Mr. G. A. Deadman, the inventor of this (to us, at least), indispensable arrangement for having extracting combs cleaned bone dry by one colony of bees. One platform will take care of all the combs from an apiary of 50 colonies. The frame under the platform is of 1x4 inch lumber, laid flatwise. The floor is of three-eighths inch stuff and must be either tongued and grooved or have very tight fitting joints. The strips dividing the platform into six sections are three-eighths of an inch thick, and wide enough to admit of the covers being placed on the supers without touching one another. We make them 6 inches wide. The outer border strips against which the others butt are 2 inches in width. The reader will notice that on the dividing three-eighths by 6 inch strips there are shown white marks, which indicate the position of the ⅜x3½ inch entrances from the colony hive to the supers containing the combs to be cleaned.

Here is where we have varied the construction, and like it much better than the super cleaner as originally made. By the individual entrance from the colony to each row of supers, separately, the bees are obliged to carry the honey from the supers straight into their hive, and will place it all in the super above the colony. Where the spaces under the rows of supers are left entirely open and free access given, the bees will, under certain conditions, place a portion of the robbed-out honey in the combs of a neighboring super instead of placing it in the super above the colony, where we want it. This is the more apt to happen if the super above the bees is more than two-thirds filled. In choosing a colony to do the cleaning, we select one that is not strong enough in field bees to bring honey from the fields, and yet has lots of young bees and plenty of hatching brood. If kept well supplied with supers to be cleaned, few bees will go to the fields, as they have plenty of better stuff to salvage right at home. About all the bees that do go to the fields will gather pollen, and the queen will be pretty busy laying eggs. We like to have this hive supplied with a young queen. The entrance to the colony, which may be seen in the center front of the photo, should not be more than ⅜x3½ inches. We place the combs on the platforms just at evening; everything is quiet by morning, and we have never had a "cleaner-up" colony robbed; they are always among our best colonies in the spring, and we have never had one used for this purpose die in winter.

One thing has always puzzled us. We have several times had European foulbrood develop in the apiary, and although super combs were given to these bees, the disease has never appeared in any of the "clean-ups," as we call them. We certainly would not risk it if we had American foulbrood.

The photo shows 25 supers on the platform. We frequently place more than twice as many at one time.

The colony (center front) shows a comb-honey super above the brood-chamber. When we use a comb-honey super over the brood-chamber we have no queen excluder under it, but when the honey taken from the (shallow) extracting frames is to be stored in extracting combs we put a queen excluder under the super. Care must be taken when sections are over the brood-chamber that the queen is not crowded by a congested brood-chamber.

We have farmer beekeepers about us who raise some comb honey but seldom have the "dishes right side up to catch it." We furnish them supers filled with sections and foundation; the supers have the weight marked on them. Just before the close of the clover flow, which is our extracting time, we run the light truck out to gather them up and pay them the price agreed upon net weight of honey. We get a fair percentage of sections filled plump to the corners, and a good many unfinished ones.

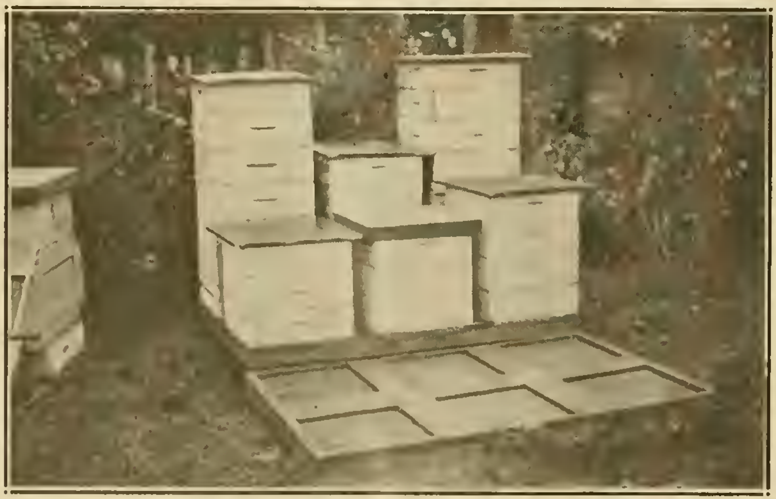
Here is where our super cleaner "scores big." The unfinished sections are carefully graded and placed in the supers to be filled from the wet combs, and the bees certainly make a good job of it, for we have very few unsaleable sections at the close of the season. We frequently have three or more supers over the colony at once, and as the honey stored in them is thoroughly ripened they are ready to be capped about as soon as they are filled.

We find it a good plan, with the best filled or nearest perfect sections, to take them away from the colony as soon as they are filled and ready to cap, and give them to a strong colony that is storing and capping honey, placing a fresh super on the "cleaner" about the same time.

If the super is placed on a colony that is not storing honey they would be very apt to rob it out and carry it below.

It will be noticed that the hive doing the cleaning has the regular hive cover over the super. We use the same on each tier. The ones shown are the galvanized covers, without the rim. We were short of finished covers at the time.

Ontario.



The Deadman super cleaner. A colony of bees is placed in the middle of front row. Supers of wet combs are piled over the other positions with entrances opening into the hive to permit the bees to clean them readily without exposing them to robbers.

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## FIFTY-FIVE NORTH

By F. Dundas Todd

The northern limit of beekeeping in Europe, with the exception of Scotland and the Scandinavian peninsula, is the parallel of 55 degrees. British Columbia's most northerly important valley with railway transportation lies pretty well, along this parallel once bearing about 20 seconds north of it. As I have told my readers before, I have long felt interested in this region for its beekeeping possibilities, but never could find time to investigate. At the opening of the past season I decided to have a look at it, especially as there were not less than half a dozen beekeepers scattered at intervals whose experience would be worth hearing. One was a beginner at Telkwa, who received a hive at the beginning of June, 1919, and reported he had taken from it 186 pounds of extracted honey in August, and had left plenty of stores for winter, plenty being about 80 pounds of honey. And he enthused greatly over the superb flavor

At the end of May I shipped two nuclei to a town called Terrace, which is located where the eastern and western climates meet. It has much less rainfall than the western slope of the Cascades, yet produces the enormous cedars and fir trees of that region, but has a shorter and less severe winter than that farther east. I planned to go straight to Telkwa, thence to Terrace and back to Victoria.

I boarded the big, fine steamboat of the Grand Trunk Pacific Co. at Vancouver on the night of the 9th of August on my way to Prince Rupert. When morning broke I found we were rapidly moving over a perfectly calm sea between Vancouver Island and the mainland. I will not attempt to describe the voyage north. It is a most delightful experience, among hundreds of small islands, each covered to the very top with evergreen firs and cedars, while the background is a range of snow-covered mountains. Wednesday noon saw me on the train for Telkwa, which I hoped to reach at midnight, but the fates interposed a small imitation of the nether regions in the way. At Hazelton the railway skirts a magnificent canyon for quite a distance, and at one point crosses a small arm by a bridge. Shortly before we reached Hazelton two cars laden with sulphur, on a west bound freight train, jumped the tracks, flopped over the side of the bridge and found a resting place at the bottom of the canyon 150 feet below. This was bad enough, but the sulphur caught fire, and then there was a powerful odor for many miles round. We had to wait about ten hours until the fire burned out. At dawn we could see white smoke lazily hanging in the air for many miles, just the tips of the trees in the lower valley showing above the haze. No human beings lived there, as far as known, and I feel certain no living thing could survive that night.

A late breakfast at Telkwa, then about 11 o'clock I was in a motor car for a 12 mile run to the nearest beekeeper. The town stands at the junction of the Bulkley and Telkwa Rivers, in the midst of wonderful scenery. The valley, I fancy, is about 30 miles wide, dropping down by slow degrees from snow-clad mountains 9,000 feet high. My route lay along the banks of the Telkwa. Sweeping out of the town the car in a couple of minutes landed me among the fireweed, and for 30 seconds I gazed at it puzzled; there was something about it very different from the fireweed I knew in the Frazer Valley. The bloom was all right, but sticking out conspicuously were thousands and thousnads of white crosses that had never attracted my eye before. The car was stopped and I grabbed a head. The cross was merely the anthers, big, fat, white, healthy, not like the ones I knew, which were short, lean, grey. What did this mean? Next, to tear the bloom to pieces to see if it contained nectar, an old trick of mine. No need, just look at that blob, a big drop of nectar caught at the bottom of the stamens and pistils; it must in itself be a load for a bee. More blossoms were examined, thousands of them, every one with a cargo of nectar for a honeybee—and not one in sight. Miles and miles, and again miles of fireweed, tons and tons of nectar available for the use of man, but only one hive to gather it, and it 50 miles from its nearest neighbor. So for 12 miles I sat, observed, and wondered if that region, that day, were but specimens of other regions and other days in the Grand Trunk country of British Columbia. Again and again I got out and examined the plants and the surroundings. Wild strawberries low down, wild raspberries higher up, the fireweed above all, a solid mass in length, width and depth of nectar-bearing flowers, with no ferns to choke their growth. The half had not been told me by my son, who knows the region well.

At my journey's end I find the beekeeper and his hive, both towering pretty high in the air. "How's the crop-" "Well, I have taken off a hundred pounds; want to taste it?" I did, and did again. Fine, very fine; could not be otherwise with so much wild raspberry around.

"Now, go to the hive and say how much more I may take off." Three stories of 10 frames each of solid honey, then one with 3 frames of brood and 7 frames solid honey, a total of 37 frames of honey. My judgment was, take two superfulls, leave the rest to the bees.

He was selling his crop to neighobrs at 40c a pound, the customer providing the container. Eighty dollars for one hive. I asked him, "Do you realize that 12 colonies will give you a living?" "Sure, but the beggars will not swarm; what am I going to do about it? I ordered a queen weeks ago, but she has not come yet." Two seasons, no swarm; why? April and May are unsettled months, then comes the heat and the nectar, and the bees are busy.

I explored the country round as far as a car would go, and saw hundreds of square miles of raspberry and fireweed. Then people said: "this is nothing, you ought to see so-and-so, the real stuff is there." But good gracious, if last year and this year are fair samples of the Bulkley Valley, every acre of fireweed is worth $50 to $100 a year and will pay far better as it lies right now than it will ever do under cultivation.

Then to Terrace, where terraces marking old beds of the Skeena River, rise one behind another. It brags about its fine strawberries, best in the world. So I asked the cook on the train where he bought his supplies. leading deftly up to my objective, which was strawberries. These he bought in Terrace. Why-Well, he thought I had never eaten a really fine strawberry if I had not eaten one grown in Terrace.

I did not get around much from the town itself, so saw only a few square miles of the country, and did not enthuse much over its honey possibilities. But one nucleus I shipped up at the end of May, consisting of 6 shallow frames of brood, had drawn out 16 ordinary and 16 shallow frames, and filled them all with fine honey. I gave the owner over 60 pounds, and insisted that he leave 75 in the hive. His wife was eager to know what she could sell it for, but the twinkle in the eyes of half a dozen young folks told me she would not sell a pound.

A similar nucleus had been managed by two different people, just as they happened to come around, with the result the queen got killed, and one swarm had issued. Both were in fine shape, but the honey on hand was just a little more than sufficient for winter stores. So probably I was mistaken in my snap judgment of Terrace.

I left the valley with the feeling I had seen a region that some day will be the heaviest honey producer of this continent, a district where a man could put down all the hives he could personally manage in one spot and get a big crop from them all. I also think it will be a land of simple beekeeping, one where swarming will be the exception rather than the rule. The thaw comes about the beginning of April, but the season does not warm up until towards May, then by the time the warm weather has developed in June, nectar is being freely secreted.

The only meteorological records available are those of 1919, and these give a minimum temperature of 9 degrees below zero and a maximum of 85 degrees above. The average mean temperatures are, January, 27; February, 23; March, 25; April, 40; May, 47; June, 53 and July 57 degrees. The rainfall is about 40 inches, well distributed throughout the year—about 2 inches each in June and July, which accounts, probably, for the fireweed's profuse secretion. Snowfall is about 5 feet.

East of Terrace the timber consists mainly of jack pine, alder and poplar. There are very few trees with a bole of a foot in diameter, so there is little likelihood of wild bees in the timber.

## SAVE THE COMBS

By L. H. Cobb

I have seen hives filled with built-out combs left to the tender mercies of the moths when the bees had died in winter, and most of them were destroyed before any use could be made of them. Now in these combs the beekeeper has a definite value, of which regular beekeepers are well aware, but which the amateurs and the farm beekeepers have not considered. Building comb is a costly process, and I have known times wher a colony would give no surplus at all if forced to build comb, when with ready built comb there would be a slow but gradual gain. On a very slow flow, built-out combs in full frames will get the honey if there is any to be had.

One young beekeeper, who had gathered together fifteen or sixteen colonies during two years, lost all but six of them one bad winter. He took the empty hives and stacked them alongside the barn, and while I did not investigate them, I know that during that summer those combs were ruined. Bees going into winter provide a supply of pollen for the young in the spring, and this pollen attracts the larvæ of the beemoth. With no bees to keep them out, and no attention from the owner, they will tunnel every comb until it is ruined. Even with bees in the hives they are hard to keep under control—except with pure Italians—and they work so fast that it takes early and sure work to prevent trouble.

When it is discovered that the bees are gone, it is a good idea to pile the hive-bodies one on top of another with the frames in them and with a tight board bottom. Place an empty super on top of the pile, and on the frames of the upper hive set a saucer with an ounce of bisulphide of carbon in it, being very careful to have no fire about. The gas will settle down through the frames and kill anything in the larva line, and then you can set the hives so no moths can enter and keep them away from moths pretty securely, but it is best to give another fumigation now and then until you want to use the frames.

If you can put the old hive over a strong colony the bees will clean it up, removing the pollen and any honey that it may contain, as well as the dead bees. After the hives have been cleaned up well they can be piled and fumigated. I have kept hives with frames free from pollen for months without fumigating and had no trouble with them. (Better not risk that too long.—Editor.)

Kansas.

## CANDIED, GRANULATED OR CRYSTALLIZED HONEY

By E. M. Cole

If it is correct to use the term "crystallized honey" I suggest that we use it in talking and writing about honey instead of candied or granulated honey. I think it would make a better impression on the mind of the customers—an idea of something desirable instead of something to be avoided.

It seems to me we ought to avoid using any expressions on our labels that tend to create a doubt in the mind of a customer, such as, "Some people imagine granulated honey is impure," or "Pure honey will granulate in cool weather, but is in no way injurious."

Better to simply urge the use of "crystallized" honey.

Some plan ought to be worked out by our State Associations whereby a producer who cannot supply all his local trade might procure honey from some nearby beekeeper who has an over supply. This would tend to higher prices on the general market and ought to be reflected by better prices for local sales.

I could have sold last year twice the amount of honey I produced, and handled it all in 60-pound cans, but the two lots I bought for my customers were unsatisfactory, and entirely on account of uncleanliness. When straining honey through cheesecloth, its weight forces a good many particles of beeswax through the cloth, and when the honey is drawn at once into 60-pound cans there is soon floating on top of the honey a pretty heavy layer of beeswax refuse; a sample from the top of one of these cans is anything but inviting to the customer.

I hope our State Associations adopt some label to be used by its members which will carry an assurance of the quality and cleanliness of all honey sold under that label.

Iowa.

## HONEY DISTRIBUTION

By A. G. Woodman

With stronger beekeepers' associations in the different States it is to be hoped that they will soon get into a position to engage in the packing and distributing of some of the crop of their respective States, at least do enough business in this line to establish prices. This would have a tendency to line up the beekeepers who are selling honey in their different localities. For instance, a beekeeper about 30 miles from here a few days ago inquired about our present prices. He stated he did not know much about market conditions, but tried to keep in line with our prices. There are any number of beekeepers who would, to a large extent, follow such leadership in case there was reliable guidance for their consideration.

The above, as a local or State proposition, can be worked out in a national way. The cost of distribution should be figured on large city costs. Some small communities would figure out considerably less; this would be up to the individual.

To give you some idea of the costs of distribution, we mention a local concern here, located across the street from us. This is the Grand Rapids Dairy Company, a corporation of farmers organized for the purpose of distributing their product direct from producer to consumer. This was supposed to be a short cut and to benefit both the farmer and the consumer. At the present time they are paying their members 20 cents per gallon for milk. The retail price is 13 cents per quart, or 7 cents per pint, making the retail price 52 and 54 cents per gallon. One would naturally think that this would be a money-making proposition for the stockholders, the farmers, who produce this milk and sell it to their own organization. However, it has never as yet paid a cent in dividends. Recently one of the stockholders offered his $500 worth of stock for $200. From this the beekeepers and others ought to be able to get some idea of the cost of distribution. These people have a fine building and the best improved machinery for the work. Before this organization was formed there was one large concern engaged in the milk business and a good many individual farmers who were peddling their own product. In organizing this Grand Rapids Dairy Company, all of these milk peddlers were taken into the organization, or forced out of business on account of the producers or farmers who had joined the organization, refusing to sell their milk to them. In this way practically all competition was eliminated, leaving only two large concerns, the farmers' organization, the Grand Rapids Dairy Company, and the Sanitary Milk Company, a private concern.

Based on the cost of distribution of milk as shown above, the retail price of honey in 5 and 10-pound tins should not be less than 100 per cent above carload prices, plus the cost of packages. In other words, 12½ cent honey should not retail for less than 25 cents per pound, plus the cost of the packages, or in the neighborhood of 30 cents per pound. We have had some men out selling honey in a house to house canvass the past winter. It has cost us about 7 or 8 cents per pound for the selling. The cost of delivery would run from 2½ to 5 cents per pound, depending upon number of orders, location to one another, etc. In figuring on the smaller glass packages, the percentages will have to be more than on the larger. The retailer ordinarily wants a larger percentage of profit on a 10 to 25-cent sale than on one of a dollar or more.

The beekeeper, in order to put the honey business on a substantial basis, should so conduct his business as to protect those who wish to engage in the sale of his product. All large businesses that are successful are based on organization and systematic methods of distribution, with ample rewards for all who are engaged in the work. The more people the beekeeper can interest in the sale of his product, the more competition there will be, and competition in buying means a strong market and higher prices. In order to interest people in the sale of honey, these salesmen must have a legitimate working profit, so as to keep them in this line of work. The only way that the beekeeper can do this is to protect the honey salesman by not selling retail quantities at wholesale prices.

Production should be considered as one end of the business.; distribution another end. Each should be so conducted as to result in a profitable business by itself. If the beekeeper engages in the distribution of his crop, he should figure what it is worth at wholesale as his cost price. On this he should figure a profit that will pay him for his time and some besides to keep the distribution end of the business healthy.

In discussion at a convention, I once heard a nationally known beekeeper call another beekeeper a honey peddler, not a honey producer. This beekeeper, producing a comparatively small amount of honey, was giving his methods of disposing of his crop. He really was devoting more time to the selling end than he was the producing end. He was not securing enough margin above the wholesale price to make it a healthy business proposition. There are some who are better fitted for the sale of honey than for the production, and in such cases it would be to their advantage to quit production and devote their entire time to distribution.

For a good many years we were quite extensively engaged in the production of fruit. Along with other large quantities of all kinds of fruit we produced on an average of one to five thousand bushels of peaches for 20 years. At that time we had a local organization known as the Grand Rapids Fruit Growers' Association. We did not attempt to sell our fruit at retail ourselves, but sold wholesale by the load only. The only thing that we did was to advertise the crop in an effort to get buyers into our Grand Rapids market from many different States and parts of the country. The more buyers we could get in here, the more competition there was, and the stronger the market. I have seen the market go up gradually 10 to 25 cents per bushel each morning, until finally prices reached such a height that the market would break. I have seen the price break in a single morning as much as 50 to 75 cents per bushel. From this you will see that there was even danger in getting too much competition and too strong a market, prices so high that the buyers could not make any profit, which worked to our advantage. At this time, in a single morning the Grand Rapids market had as high as 65,000 bushels of peaches on it, all of which would be disposed of and out of the farmer's hand by 9 a. m. At this time there were numerous efforts on the part of the city people to establish retail markets, but without much success. The larger growers preferred to devote their entire time to production and leave the distribution of the crop to established trade channels, the wholesale or carlot buyers, grocers and hucksters.

There is advantage to the beekeepers in interesting as many people in the sale of honey as possible, and a necessity for protecting their interests and making it profitable for them.

Michigan.

## HIVE RECORDS

By L. A. Schott

In the spring of the year I tack on each hive, on inner cover, a card, and every time I look at a swarm and note its condition, I date the card and mark the percentage in the space. I use the 100 per cent for a good strong colony, there being ten frames, it is easy to calculate the percentage. I also note the queen, age, etc. I use the following method in regard to queens: x queen is an extra nice one, but do not know about her offspring; (x queen x) marked thus shows the queen is extra good and her offspring is extra good. But when I mark one thus, o queen, it shows she is poor; oo, she is very poor, and should be replaced at once. Also, if I mark one x or xx in front of the word "queen" and follow with an o or oo, it shows she is nice, or queen, but has mated with a bad drone.

When a queen dies or is replaced with another, I run a line through her record and start a new one below, there being four spaces, which I find to be a plenty. When a colony swarms out I make a record on the hive that it is hived in and start a new record with the virgin. Whenever I take any honey I always mark about the amount taken. Whenever a super has as many as 20 or 24 complete sections, I put underneath a new one with a bee-escape board between the two. In that way they are never crowded and seem more contented. The honey is taken off the next day and the unfinished sections are left in the super and filled in with empty ones. I then give the super to the next hive that needs one. In that way I do not have travel-stained sections, and, besides, the partly filled sections act as a bait for the next swarm.

I also have a record on my stool of all hives that have any honey in supers. I use the following method: Whenever I peep into a super and see one half full I put a circle half way around its number on my stool record, and when I look again, in a few days, and it is three-fourths done I increase my circle until it is as full as I want it. So when I look on my stool and see a hive that has only a small dot under the number I know I do not have to bother it for a few days. My stool record is re-copied every 10 or 12 days, as the case may be.

I also note the ripe cells in a colony. If it should be queenless, number 44 has 7 ripe cells, by the dots around the number. So I can tell at a glance where I can get a cell if I need one.

Whenever a colony gets back to normal it is erased from the virgin list, or queenless list, as the case may be. I have now tried this out for several years and find it works fine; but one must use hives with inner covers or it will not do, for the weather would soon destroy it.

Missouri.

(We give the above letter because Mr. Schott appears very methodical. We can give one suggestion additional: We used to keep a similar record, when we worked with a less number of apiaries than now. In order to avoid lifting the hive cover to get to the record, we used to fasten it on the back of the hive with a tin holder, made as per engraving. If it is rightly placed there is no danger of its being damaged by rains. But one might use the precaution of covering it with a sheet of tarred paper.—Editor.)

## BEES OF AFRICA, ALGERIA AND MOROCCO

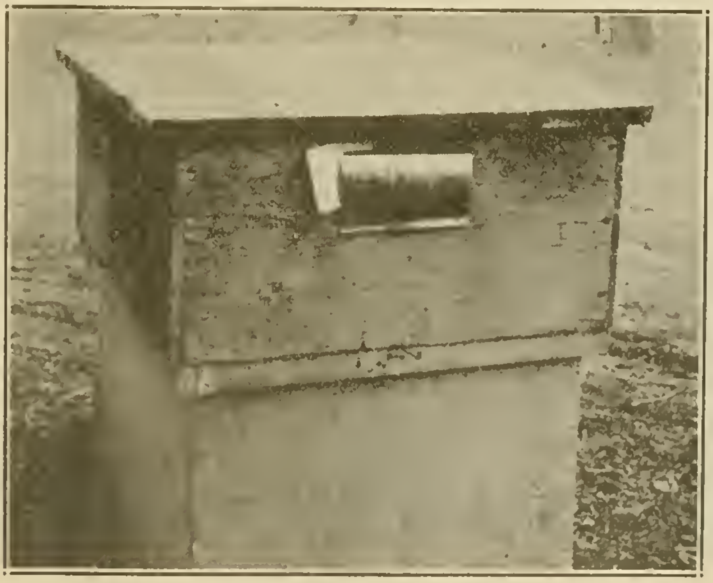
By Ph. J. Baldensperger

As I wrote you, after leaving Spain, I went over to Algeria and looked for bees. Since about 10 years my attention was called to two kinds of bees existing in North Africa. In vain did I try to get hold of some of the yellow bees. Mr. Bernard, who gave you a description of them in the American Bee Journal for October, 1917, page 341, was the only person who has had possession of any of them, and his description is too short to give an idea. He had promised to let me have some queens, but he failed in his raising scheme, at Algiers. Another gentleman who had also promised me some could not keep his promise. So I resolved to go and hunt for those bees myself.

North Africa, from the Gulf of Gabes, east of Tunis, to the Atlantic Ocean, consists of Tunisia, Algeria and Morocco. Three mountain chains cut these three countries diagonally, from northeast, between Tunis and Sfax, to southwest between Agadir and the mouth of the river Draa, on the Moroccan coast of the Atlantic.

The different chains are: the Small Atlas, starting from near the Mediterranean; the Great Atlas, from Algeria towards Agadir, with peaks over 10,000 feet high and covered with snow, running down to 3,300 feet, south of the provinces of Algiers, Oran and Constantine; then the Anti-Atlas, south of Sus and Agadir. The description of these mountain chains is necessary in order to show why the black bee of the "Tell' (hills) in the north, has never come in contact with the yellow bee of the south regions near the Sahara. Fully 125 miles of arid steppes and high mountains lie between the black and yellow bee regions. Only halfa, diss and drinn (all coarse grasses) grow there. These 3 graminaceæ are fit only for fodder for the camels which the nomadic Arabs keep in great herds on these steppes. Not a single flower could I detect in the long trip on the high plateaux. Of course not a bee will venture across these cold plains in spring, as they are all over a thousand meters above sea level. Besides, what would they look for in these lands, fit only for camels? These animals are not as large as those of Palestine and of Syria.

I studied the black bee or "Tellian," which I think is a proper name, because she is found all along the hilly region, north of the Atlas, wherever bees can live, and I found



Metal holder for records, once used in the Dadant apiaries.

her wide and far spread, from Tunis to North Morocco. This bee has been called the Punic, the Kabyle, the Algerian bee, but is the same insect all along the "Tell" or hilly region. So I propose to call her the "Tellian" in opposition to the "Saharian," found only south of the Atlas.

The natives of North Africa are not all of the same race. There are the Arabs, who came from Arabia, and although they imposed their Moslem religion and, to a great extent, a corrupt Arabic language, the Kabyles and Berbers have conserved their own tongue, and their customs, though they all speak Arabic. The Arabs introduced Arabic manners and beekeeping customs all along the north of the Atlas, as they brought the hives with them in their migrations between the eighth and twelfth centuries of our era. They invariably adopted the horizontal hive, known as "Jibha." Some use a sort of fennel-stalk hive, forming a long square, not over 8 inches wide, but over 3 feet long. Others use a cork-bark hive. Being nomads, they always laid their hives down near their camps, ready to take them up and load them on their camels in their march towards the west, from Arabia to the Atlantic Ocean.

For fear of having their bees stolen, they usually laid them near a "marabout," the tomb of a Mohammedan saint, of which many are found in the vicinity of the Sahara. There the bees were in greater security. Centuries have passed away, but still the hives are laid down upon the ground near such sanctuaries, ready for an emergency. I saw groups of such hives in North Morocco and North Algeria, and it would be difficult to recognize that they are hives if the bees did not show by their buzzing and humming that they are as vigilant guardians as their lords, ready to pounce upon the enemy with rapidity.

In 24 hours' time, a train landed me safely near Figuig. I lost no time and at once went to the Moroccan villages. I saw the beautiful bee in Figuig first. She closely resembles the Cyprian, including the golden crescent on the base of the thorax. It was a cloudy day and a single bee started from a hole in the wall; for that day it was not possible to have more than a look at the coveted beauties. I tried my best, compliments, flowery sentences, but to no avail. Two hives were plastered into the wall and nobody could have detected that there were bees behind that wall. The flying hole alone, slightly propolized, showed that bees were passing there.

I wandered over the oasis, in search of flowers, but found only some tiny turnip flowers, the stems of which were hardly a foot high. I saw three bees, in all, trying to suck out the scarce nectar. I wonder how in the world bees have contrived to pull through for many centuries, south of the Atlas. The swarming season, El Hadj Oud Moussa told me, would come in about a month, in the middle of April. If I came back then he might possibly sell me a swarm—if his bees swarm. It was then the middle of March and the ground was white with frost every morning, while at noon the thermometer would mark about 70 degrees. These bees therefore, stand cold winters, hot summers and scant pasturage. There had just been a year without rain. Of course each owner had seen his apiary reduced by half, and of course "it was the moths." Certainly the moths destroy the combs, but the bees died first of privations. So the poor moth gets the blame, though only responsible for damage to the combs.

In the five villages of Figuig I do not believe there are more than 20 colonies in all, if there are as many. I went to the French officer in command and asked him whether he could not help me to get a swarm. He was very accommodating and gave order to a Moroccan soldier to accompany me in a hunt for bees. We enquired of every beekeeper, without success. I went to the farthest station; all in vain. Having traveled from one oasis to another; I found that bees were scarce all along, in the palm tree groves. In the Black Mountains, some 5 or 10 miles away, the inhabitants signalled to me some stray hives of bees lodged in the rocks. I wonder how bees have escaped at all, taking refuge in the rocks and gathering enough to last them through the year.

In the different oases, the tribes have fought each other; and from time to time, the mighty chiefs of Morocco, Tlemcen or Tunis, pounced upon the miserable Sahara villages, destroyed everything or replaced the population with their own. Under such circumstances, how could hives of bees resist? The houses of the Berbers are made of sun-dried bricks, which resist as long as the weather is dry, but heavy rains, which come seldom, are disastrous. The poor inhabitants have been changing masters and religion for 2,000 years.

How did the yellow bees come there? There are many Jews in the region, who came to the country after the destruction of the Temple of Jerusalem. In those days the Jews were good at agriculture, and it is very likely that they introduced the yellow bee into the Sahara, bringing her from the Greek colony of Cyrene, near Tripoli. We know by old manuscripts found in the oases of Oued and Guerara, that the Jews influenced the original tribes (then pagans) to embrace Judaism, and that they taught them Greek Culture and industry. The north of Africa was held by the Phenicians, later known as Carthagenians (now Tunis) and the part farther south by Greeks and Jews. As the travel was always carried from east to west, it is most likely that the Cyprian bee was carried westward to the Saharian part of west Africa. Be it as it may, the two bees resemble each other, in color at least. As I found a few days later, these are much more gentle than the Cyprian, and possess a well-developed smelling organ. I will tell of this farther along.

(To be Continued)

Arkakeba school apiary near Algiers.

## SOME EARLY BEEKEEPING HISTORY

### Incidents in Massachusetts Colony Prior to 1654

By George W. Adams

It would be difficult to find a locality in New England less adapted to beekeeping than Essex County, in Massachusetts; for, although we have here many productive farms and beautiful estates, yet the severe winds in winter and other climatic conditions, as well as the fact that along the sea coast the salt meadows and red oak forest land give no pasturage, and very curiously the white clover which yields so richly in Vermont is not nectariferous, or very slightly so, make a serious handicap.

In spite of all of these disadvantages, bees have been kept, and would seem to have been fairly plenty by 1660, for under this date I find in our Essex Registry the inventory of an estate in what is now Danvers, where a "stand of bees" was appraised at 5 pounds, which, taking into consideration the purchasing power of money, is not far from present prices.

Some one has said that "new truths" are usually the "old errors" and, when I read how municipal ownership will solve all economic troubles, it recalls the early experiment of the town of Newbury in municipal bee-keeping.

The writer has spent a good deal of time in tracing this, perhaps the first attempt in the colony at municipal or public control of a utility.

Fortunately for the historian, however unfortunate for the "expert" who was put in charge of the enterprise, he became our first pauper, and the controversy over his support put the apiarian experiment on record, in town, county and province.

The town received its first settlers in 1635, and five years later the "seven men," or, as we should say now, the select men, established a town apiary, which was also undoubtedly intended as an educational "experiment station," on the farm of one Davis, who is described as a "renter," which would certainly imply that it was plantation or "common" land; the old records saying about this time "Quacacunquen is allowed to be a plantation and the name thereof to be Newberry." There were at that time 91 free-holders.

This town bee-yard was put in charge of a man named Eels, who was brought from what is now the town of Hingham "with," say the colonial records, "ye expectation of his doing service that ye town was not acquainted with." It would be interesting to know where the bees were obtained, and one or two "clews" are now being followed with that purpose in view. A little story is told of a local Indian, who curiously observed the bees at work. He had seen the horse and ox—animals previously unknown to him and his people—and marveled that they should toil at the command of the settler. The honeybee was also a stranger, and the situation seemed to have become serious. "Huh! white man work, make horse work, make ox work, now make fly work; this Injun go away.!"

The winter following the establishment of Newbury's apiary was perhaps the most severe this locality has ever experienced, there being in all probability no possible flight from early in November until March. It will be remembered that Boston Harbor was closed by ice from November 18 to February 21. It is probable that the second year saw the bees in very poor condition. Eels was an old man and evidently discouraged. In a year or two he seems to be "living with" John Davis, rather than conducting a business, and, homesick, perhaps, he "swarmed out" and got as far as Ipswich, on his way to his old home, where he was hived in the jail by an alert constable, and the controversy began as to what town should support him.

A petition was sent to the "Great and General Court," and after due consideration the Colonial Legislature sent down the following order:

"May ye 14, 1645. It is conceived John Eels should be placed in some convenient place where he may be implied in his trade of beehive making, etc., and ye town of Newbury to make up what he wanteth of defraying ye charge of his livelyhood."

One might infer from the term "livelyhood" that the clerk himself had some personal experience in beekeeping; at any rate the spelling is singularly appropriate.

At the time of which I write there must have been a very considerable interest in bees and beekeeping, for, during the same year that Newbury was maintaining a municipal yard, the question of the ownership of an escaped swarm was adjudicated by the full bench of the Superior Court, "Mr. John Endicott, Deputy Governor, presiding, with Mr. Symon Bradstreet, Mr. Emanuel Downing, Esq., Mr. William Hawthorne and Mr. Edward Holliocks on the bench."

The defendant was brought in on a warrant or "presentment," which charged "having sinned against ye county not only in taking away ye good of his neighbor, but by Lying and insineuating to deceive." The Court came in at Salem, on the 25th of the eleventh month, which would be, according to our present calendar, January 13, 1641, and the case was tried before a jury.

The details of the trial are quite fully given, but as the testimony was taken in long hand, the peculiar long hand of a man who wrote in the characters of the 16th century, and as the tongue of the witness frequently outran the quill of the clerk, I found it by no means easy to read. It is, of course, devoid of punctuation, and the paper crumbling with age.

John Kirtland, living in what is now Lynn, evidently had a small apiary and to him came his good neighbor, Jno. Deacon, who testified: "I heard a noyes of bees, and thought they were my neighbor Kirkland's bees and so told him: If you will come I will show you where they are, and so did show him ye place, but ye bees were gone, next morning; said he could not find them, and I pittied him, for ye bees were not found there."

The summer passed and in November the defendant came to Kirkland and presented a claim for damage to his corn, the previous season, offering to settle for a certain tree in Goodman Kirkland's woodland. This delayed claim for unproved damage does not seem to have aroused suspicion, and the tree was freely given. The new owner, however, made the mistake of employing a man to cut it who was evidently of a practical mind, for he testifies: "I put myself to all ye conceits I could know what he would do with that tree; at last I laid my head to ye tree and there a humming and I said there is bees."

"Goodman Deacon also testifieth there is bees in it."

Kirtland testifies: "I gave him ye tree but not ye bees."

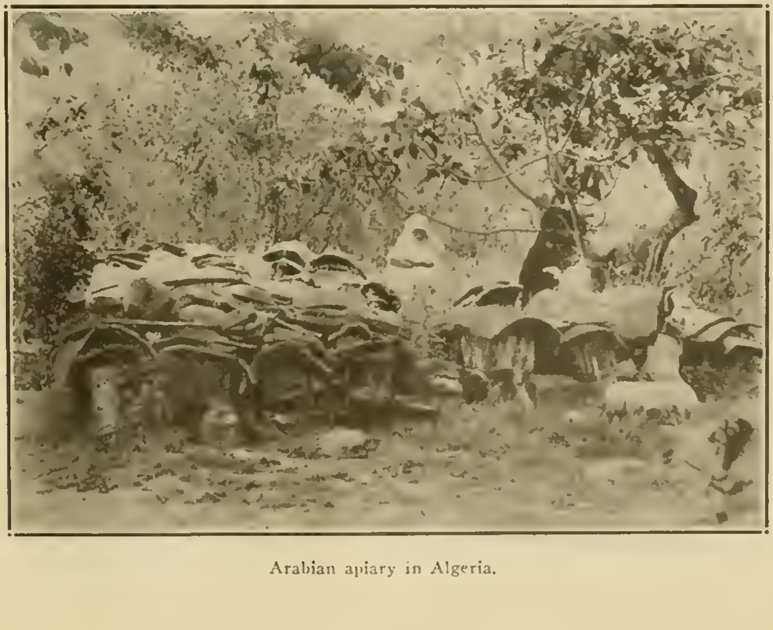
The jury found as follows: "We find for plaintiff his bees and if living and well in spring only to pay ye charges of court; if all dead to pay 30 shillings." Court charges were 15 shillings, and two days later an execution was entered in that amount, but the Court, with a leaning to mercy, ordered that, considering "it was ye first time, and ye estate not great, the punishment shall bee only a fine of 20 shillings."

Thus, 280 years ago, the Massachusetts Court established a precedent, and fixed the value of an absconding swarm.

At this time, a first-class carpenter received 18 pence per day, while a good "stok of bees" was worth from 1 pound to 1 pound 6 shillings, or the equivalent of about 15 days' labor.

Honey in the comb was appraised at 1 shilling 9 pence.

In the old days when Ipswich was our shore town, there came before the court, "the Hon. Judges, Mr. Symon Bradstreet, Mr. Samuell Symonds, Major General Dennison, Mr.



Arabian apiary in Algeria.

Wm. Hubbart and Maj. Wm. Hawthorne" on the bench, one Isabel Holdred, to ask protection from an "infernal" bee. This was in February, 1659, thirty years before the witchcraft trials which were held before the same court. The records say, "Isabel Holdred testifieth shee was tormented night and day and several apiticions appeared to ye deponent in the night, the first night a Humble bee. The Deponent was exceedingly affrightened and skipped to Nathan Gold, who was in the opposite chimney corner and caught hold of ye hayre of his head, and her speech was taken away for ye space of half an hour."

There is a chance for much speculation here upon which the faded and crumbling records of that early day give no light. Why was Nathan in the opposite corner? Her speech was taken away, but Nathan may have said a good deal, if she grasped his "hayre" the full half hour! We hear nothing more of the bee, but Isabel's troubles were not ended, for we find in the "Records and Files Vol. I," that she was "presented" for "unseemly carriage," the case being left to "Referrees" who "found no censure on her, as she was troubled with fits and her own husband present in the house."

One wonders if the Referee considered the "fits" or the "husband in the house" the greater excuse for her "unseemly carriage"; also, the inference from the records is that, although the bee is not mentioned again, the husband was "stung."

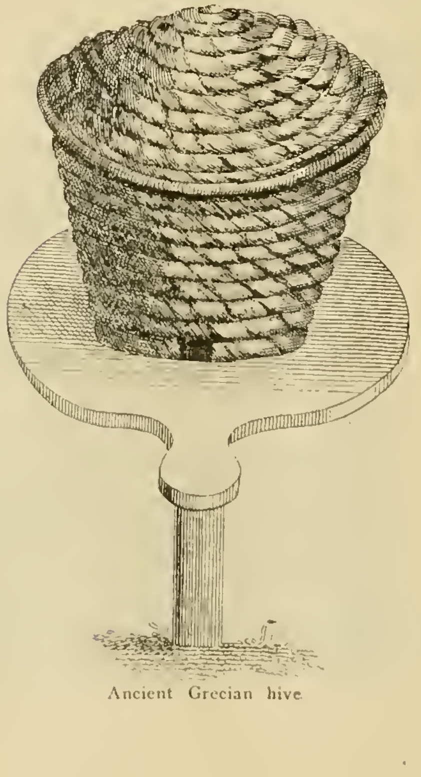
Massachusetts.

## GREEK BEEKEEPING IN 1675

(From "A Journey in Greece," by George Wheeler, Esquire).

This Mountain (Hymettus) is celebrated for the best Honey in all Greece, of which it makes a great quantity to send to Constantinople, where it is much esteemed for making Sorbets. They use therefore to bring all the Honey made hereabouts, to be marked with the Mark of this Monastery of Cosbashi, to make it sell the better. We eat of it freely, finding it to be very good; and were not at all incommodated with any Gripings after it. This Mountain was not less famous in times past for Bees and admirable Honey, the Antients believing that bees were first bred here, and that all other Bees were but Colonies from this Mountain; which is so, we assured ourselves, that it must be from this part of the Mountain that the Colonies were sent; both because the Honey here made is the best, and that here they never destroy the Bees. It is of a good consistence, of a fair gold-colour, and the same quantity sweetens more water than the like quantity of any other doth; which they sufficiently experience in making Sorbets. They wondered at my Comrade, in that he preferred the white Honey of France (as that of Provence is), telling him the white Honey was raw, and not perfectly concocted, either by Nature or the Bees. Strabo, I remember, saith The best Honey of Hymettus was by the Silver Mines: But where they were is now unknown; unless hereabouts by the same reason. Now the best Argument to prove that Bees had their original from hence, is, that here they never destroy or impair the Stock of Bees in taking away their Honey. A thing which I no sooner knew, but I was inquisitive to understand their Method in Ordering the Bees; which being an Art so worthy of the Knowledge of the Curious, I shall not think it beside the purpose, to relate what I saw, and was informed to that effect, by such as had Skill in this Place.

The Hives they keep their Bees in, are made of Willows or Osiers, fashioned like our common Dust-baskets, wide at the Top and narrow at the Bottom; and plaister'd with Clay or Loam, within and without. They are set the wide end upwards, as you see here, the Tops being covered with broad, flat Sticks, are also plaister'd with Clay on the Top; and to secure them from the Weather, they cover them with a Tuft of Straw, as we do. Along each of those Sticks, the Bees fasten their Combs; so that a Comb may be taken out whole, without the least bruising, and with the greatest ease imaginable. To increase them in Spring-time, that is, in March or April, until the beginning of May, they divide them; first separating the Sticks, on which the Combs and Bees are fastened, from one another with a Knife; so taking out the first Combs and Bees together, on each side, they put them into another Basket, in the same Order as they were taken out, until they have equally divided them. After this, when they are both again accommodated with Stocks and Plaister, they set the new Basket in the Place of the old one, and the old one in some new Place. And all this they do in the middle of the day, at such time as the greatest part of the Bees are abroad; who, at their coming home, without much difficulty, by this means divide themselves equally. This Device hinders them from Swarming and flying away. In August they take out their Honey; which they do in the day-time also, while they are abroad; the Bees being thereby, they say, disturbed least. At which time they take out the Combs laden with Honey, as before; that is, beginning at each outside, and so taking away, until they have only such a quantity of Combs in the middle, as they judge will be sufficient to maintain the Bees in Winter; sweeping those Bees, that are on the Combs they take out, into the Basket again, and again covering it with new Sticks and Plaister. All that I doubt concerning the Practice of this here in England, is, that perhaps they gather a less quantity of Honey from the Bees here in England, and that, should they take the like quantity of honey from the Bees here in England, they would not leave enough to preserve them in Winter. But this hinders not much; for being less covetous, and not taking so much Honey from the poor Bees, the great encrease and multiplying of them would soon equalize, and far exceed the little Profit we make by destroying them. This is done without Smoak; wherefore the Antients call this Honey "Akapnison," **Unsmoaken Honey;** and I believe the Smoak of Sulphur, which we use, takes away very much of the Fragrancy of the Wax, and sure I am, the Honey can receive neither good Taste nor Smell from it.



Ancient Grecian hive

## FOOD SCIENCE AND THE HONEYBEE

By H. W. Sanders

The study of foods, their chemical composition, their function in life, is a branch of applied science that has made remarkable strides during the past few years, both in agricultural experimentation and in medicine. The first attempts to formulate rules and principles of feeding from a scientific view point were by no means a success, because of their endeavor to use a living organism as if it were a laboratory retort, but latterly, since the nature and functions of vitamins have become more plain, and since a greater allowance has been made for such uncontrollable factors as idiosincracies of the individual or changes in the general health of the subject and consequent variations in the ability to assimilate the chemical constituents of food, real progress has been made, and the true value of much of the patient work of the first investigators realized.

It is rather surprising that the honeybee has so far missed the attention of scientists working along this line, because this insect, in common with the rest of the order, separates the different functions of life into well-defined periods corresponding to its metamorphosis. In the first period the entire energy of the larva is used up in growth; in the second it is consumed in the production of the organs of maturity. In the imago the food is used solely for the maintenance of bodily energy, and, during the winter, in the production of heat by muscular, not by chemical action. Consequently, in theory at least, the insect offers a fruitful field for study if the practical difficulties could be overcome. Whether this is a matter of reasonable expectation, time alone will show, but the importance of the considerations outlined above to the practical beekeeper is considerable, in view of its effect on practical apiary management.

It has been often stated by well-known beekeepers that sugar syrup affords a well-nigh ideal winter food on account of its low ash content, which is necessarily left in the intestines of the bees after the carbohydrate has been dissolved in the stomach and converted into heat through the medium of muscular energy. Honey shows a larger ash, and so must be considered inferior for purely wintering purposes. It should be borne in mind that insects have no means of building up their wasted tissues as have the higher animals, and therefore this winter food is used for one purpose only, that of supplying the energy necessary for the heat-producing activities of the cluster.

When the progress of the season, however, involves the commencement of the labors of brood-raising, the food used by the bees has a double purpose to fulfill. There is the heat necessary to "hover" the brood during chilly spring days, and there is the necessity for nourishing the larvæ, as they emerge from the eggs. There is also the feeding of the queen to produce the large amounts of eggs necessary to re-populate the hive, but so little is known of this matter that it need be only mentioned here. Undoubtedly the worker-bees feed the queen upon some food that is given in a partly or fully digested condition.

It is at this point that the spring gathering of pollen becomes of great importance. This forms the nitrogenous or protein portion of the ration, so necessary for rapid growth, and as the larva has no drain on its energies for motion, heat, or any bodily function save only that of growth, it is able to consume sufficient food to make enormous progress when judged by the standards of other organisms. Finally, when it becomes full-fed it has sufficient stored-up nourishment to enable it to elaborate the organs of the perfect bee.

Finally the insect emerges from pupation, and from then on she has no growing or repairing of her anatomy to be effected by the fuel consumed in her stomach. The sole necessity is the production of muscular energy for the work of the hive, and the heat regulation which, as stated, is purely a mechanical affair, whether it consist of hovering the brood on a cold day, or ventilating the hive on a warm one. The food that is prepared for the queen or brood is not consumed in the body of the worker, but only receives a chemical treatment there.

Translated into actual practice, therefore, the philosophy of feeding bees seems to come out somewhat like this:

1. Whenever there is brood in the hive there should be abundance of pollen, natural or artificial, and honey, as the constituents of honey apart from the pure sugar are of a protein nature, and in addition probably contain necessary vitamins.

2. When there is no brood, the food should consist of the purest saccharine matter obtainable. In practice this is usually syrup made from the best sugar. Its ash content is so low that to compare it with honey is like comparing hard and bituminous coal. The hard coal is rendered nearly all into gas during combustion and there is much less ash than with the soft coal. Similarly, the sugar burns hotter in the laboratory or furnace of the stomach and leaves less ash to trouble the bees with dysentery.

Even where cleansing flights are possible, the use of inferior food is bound to have its effect in sapping the vitality of the colony through the energy consumed in digesting and separating the actual food from the impurities and water in the food, and it is quite a question whether it would not be profitable to feed bees exclusively upon the finest honey gathered. It certainly is one factor in improving the strains of bees through breeding that does not appear to be considered. In improving other lines of stock through breeding, environment is considered as well as heredity, and every effort to give the pure-bred scion the utmost assistance in developing constitutional strength by assimilating the best of food is made. Why not in "breeding for the best" try to feed the improving race of bees in such a way as to ensure their developing under the most favorable circumstances and surroundings?

Manitoba.

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## MAKESHIFT HIVES

By John Prothero

Anyone advocating "Better Beekeeping" today in rural districts is met with a very real difficulty, the alarming price of good dovetailed hives in pine or cypress. There is little use in promising high dividends after the capital expenditure has been made. The bottom has fallen out of the bushel basket for the time being. The new administration is hard at work considering various methods of tinkering; you cannot get people to make what they consider to be heavy expenditures at a time when retrenchment is the first need. I consider that one is doing the large manufacturers a good turn, and not a bad one, when one takes up seriously the question of efficient makeshift hives. The larger the number of movable-frame beekeepers the greater will be the demand for good factory-made hives. Nobody likes makeshifts, although everybody enjoys showing examples of ingenuity to admiring friends. The makeshift apiary of today is the well equipped apiary of tomorrow; and tomorrow perhaps the price of a dovetailed, metal-roof hive will not be so near the price of a Pierce Arrow. By makeshift I mean the half-way house between the gum and the factory-made dovetailed hive. Get people today to fit the Langstroth frame efficiently into any old thing; that is the first step.

Grecian hive with lid removed.

Take your foot rule in hand and invade the back yard of the local store. For years I used a Kirkman's Borax Soap case as temporary hive, having discovered that the length exactly held Langstroth frames from staple to staple. It seemed culpable to me for apiarists to scatter frames around a hive propped against the sides, leaning against one another clumsily and insecurely, when this light case held the frames so well; it is better for this purpose than an empty body, having a bottom and extra depth, in addition to being lighter. With a small roll of calico over the top it is a perfect insurance against starting robbery. I kept swarms on frames in these cases when I happened to be short of equipment, and it struck me that one had here a quite efficient makeshift hive in which one could even winter bees in the South. I do not see any reason for saying discreetly "The packing cases of a well-known soap will be found to make excellent makeshift hives." Why not give this noble and beneficent firm the full benefit of the ad? I feel very strongly that no beekeeper should use any other kind of soap, that they should blacklist and blackmail any storekeeper who does not stock it. In this way we may be sure that other firms will follow suit, that the Alaska salmon canners will recognize the insistent claims of the Langstroth frame, and that storekeepers will realize that there are eight hundred thousand beekeepeers in this country.

But to retrace the subject, the beekeeper who goes through the storekeeper's back yard with foot rule in hand may make other useful discoveries. A little sawing and nailing will do wonders. With me it has become a hobby; when I see a strong dovetailed case, on a sidewalk outside a grocery, I measure it instantly. The cartridge packing cases of a Bridgeport firm are so excellently made that if I lived in that neighborhood I would consider adopting a frame of a size to fit them; except in large cities they are not sufficiently common to make it worth while starting a cartridge case apiary. But it is different with soap, canned salmon, baking powder and similar things.

I shall bring down contempt upon my head if I recommend the small beekeeper to cut packing case material to hold Langstroth frames, to use a sheet of enameled cloth over the frames, to paint or tar cotton cloth over a rough cover, even to descend to the disgraceful use of glue in this form of carpentry. You would prefer to keep him a gum beekeeper or a non-beekeeper; I am for making him, at all costs, some sort of a movable-frame beekeeper. School teachers to whom one shows contemporary price lists say that it simply isn't practical politics to urge their charges to go in for modern equipment. They are the best authorities on this matter; we must believe what they say and find some way of turning the coming generation into movable-frame users.

The use of straw has advantages and defects. In Europe, of course, even with lumber at pre-war levels, it has always been popular. I would not for an instant advocate the use of the "skep," familiar to Americans on honey labels and nowhere else. The skep is a trifle better than the gum; that is all that can be said for it. But the use of plaited straw brood-chambers, where the straw rope is bound tightly round a skeleton of wooden lath, has much to recommend it. A British firm has for years marketed a hive of this type, known as the Buncefield. The plaiting of straw and twine is an unknown art in this country. When in France, I greatly admired the way the French truck drivers made bonnet covers of straw rope for their trucks. It was closely woven and stiff in texture, and warm and waterproof. The first attempt to make this sort of hive would probably result in something like little sister's first attempt to make biscuits, and there is a danger that they would be condemned as bum affairs; but I feel sure that anyone who had seen a snug, well-made straw-and-lath body would realize its possibilities. This is one of the things for which one requires the local craftsman, the skilled specialist who supplies local needs. It is not likely that the large firms would take it up, and it would be too tiresome for each individual beekeeper to acquire the necessary skill and practice. Unless the price of lumber shows signs of making a big descent it looks as if it might pay an inventive textile engineer to devise a rough combing and plaiting machine for straw and twine, for there are many other purposes to which it could be turned beside beehives. Nobody who has ever seen a ten-year-old skep, as hard as a board, varnished by the bees on the inside, can realize how snug and satisfactory a material it is. For the circular skep, a mid-rib of bramble is usually employed by the village maker; but for frame hives, with their angle corners, wire could be used. The British firm I mentioned uses bamboo strips.

Virginia.

(We used straw movable-frame hives years ago. They were bound with wire, and the corners were 2-inch square posts. They were really better than wood, being warm and 2 inches thick. But the mice gnawed their way through the walls in numerous instances. Can any one suggest a remedy?—Editor.)

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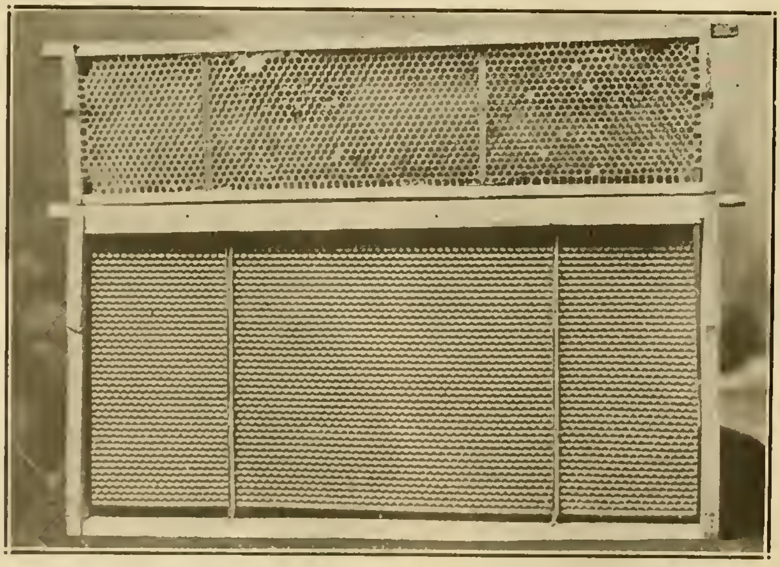
## DRONE-COMB AND ITS (AB)USE

By F. Greiner

The progressive honey producer of today has no use for drone-comb in the brood-nests of his hives. In the bee books and bee periodicals we are admonished to "cut it out," both literally and figuratively, and it is well to do so; we are agreed on that. In earlier issued bee books, as well as in the latest, drone-comb has been given the name "store comb," whether merited or not. Indeed, we very often find the nicest pieces of honey even in bee trees, of drone size. Theoretically, it is cheaper, or more economical to build drone-comb than worker-comb; the larger the cells the less material required. When combs of the large-sized cells are whirled around in the honey extractor the honey comes out easier and cleaner, less adhering to the cell-walls. This is true, and from our standpoint it might be considered an advantage to have drone-comb used in our supers, in particular the extracting supers. The bees, however, are not guided by their sense of economy when it comes to building comb to store their honey, and build both worker and drone-comb haphazard. They do this even when we may have eliminated all drone-comb from their brood-chamber by the use of full sheets of comb-foundation, and it would seem that they would, under these circumstances, in their desperation, construct nothing but the large cells. The large majority of us beekeepers have for many years used full sheets of comb-foundation in our brood-frames, yet we had to cull out many otherwise nice combs on account of the foundation having sagged to an extent to make them, for all practical purposes, drone-comb; and many of these have been used in the extracting supers. It is about time that all these combs containing any unsuitable cells, i. e., of drone size, be culled out again and rendered into wax. Why? Are we not using queen excluders? In answer I want to say that I have, as others, used drone-combs over excluders for years, and while I have seen some drone-comb filled with honey, more often these combs have been kept free from honey very persistently by the bees, expecting the queen would find them and they might rear a nice lot of drones there. Alas, sometimes a queen has found a defect in the excluder and squeezed through and did what was expected of her, but not to our satisfaction. Much valuable comb space has thus been wasted by our bees for years, and it is high time, as I said before, to put a stop to it. We cannot keep our extracting supers as free from drone-comb as our brood-chambers. Better render all defective combs into wax and substitute comb-foundation instead. May I, right here, give vent to my feelings, expressing my determination in this resolution to take more pains in the future, to have more perfect brood-combs, to have all foundation-filled frames built out without any sagging, having them built out, if possible, down to the bottom-bar? This may mean better wiring, having frames built out in upper stories, etc. I want to cite a mistake I made at the time when I adopted the sectional hive years ago, a mistake that has cost me dearly, from which I am still suffering



Metal frame supports invented by Harry Hartman, of Braddyville, Iowa. This is somewhat similar to Doctor Miller's wood splints, except that it is made of metal and fastened to both top and bottom of frame.

undesirable results. The frames in these hives were planned for half-depth Langstroth size and were 4¼ inches in the clear. I bought the Langstroth size comb-foundation and cut the sheets in two lengthwise. Be it, that the foundation received had been scantily cut or for other reason, at any rate, when these shallow frames were filled with this foundation it left a space above the bottom-bars from three-eighths to one-half inch. In such shallow frames, even without wiring, sagging would be negligible, when medium foundation is used. My bees very cleverly filled out my frames with a row or two of drone-cells at the bottom. What this means when you want to inspect brood sections from the underside, or drive the bees downward or upward, as the case may demand, those will realize who are familiar with the management of sectional hives. The sheets of foundation should almost touch the bottom of such shallow frames as these were.

New York.

## COST OF PRODUCTION OF HONEY CROP

By John Burgschat

Twenty-five colonies in yard.

Five of these were not used for surplus, but for increase and to rear queens.

Twenty colonies were run for surplus.

Fifteen of these were 2-lb. packages purchased in the South in May.

| | |
|---|---|
| Cost of 20 hives, including painting and foundation | $118.00 |
| Cost of 50 comb-honey supers | 220.00 |
| Cost of 50 extracting supers (second-hand) | 20.00 |
| Cost of extractor (one-half interest) | 15.00 |
| Cost of bees | 100.00 |
| Total cost of equipment | $473.00 |
| Interest on investment of equipment at 7 per cent | $ 33.11 |
| Depreciation on cost of equipment at 10 per cent | 47.30 |
| Total expense of use of equipment | $ 80.41 |
| Expense of use of equipment from above | $ 80.41 |
| Cost of foundation for supers | 12.50 |
| Cost of cartons for sections | 22.00 |
| Cost of glass containers | 20.00 |
| Cost of 1,600 sections | 18.75 |
| Total expense to produce 2,100 pounds of honey | $153.66 |
| Gross receipts of 1,600 sections | $450.00 |
| Gross receipts for 600 lbs. extracted | 210.00 |
| Gross receipts for total | $660.00 |
| Total cost of production | 153.66 |
| Net profit for labor | $506.34 |

Labor, about an average of four hours per week for seven months.

Used practically 100 pounds for home use.

## SOME KANSAS NOTES

By Frank Van Haltern

Hive records properly kept are often quite valuable in pointing out mistakes and making it possible to plan ahead with some certainty of success. The following figures, obtained from our records, are based on estimates made by examinations in the fall and spring:

Between October, 1920, and April 20 to 26, 1921, when they were unpacked, 156 colonies consumed an average of 24 pounds of stores, ranging from 13 to 35 pounds. This would seem to show that the minimum allowance should be not less than 40 pounds for the winter, so as to have some honey in the hive for spring brood-rearing.

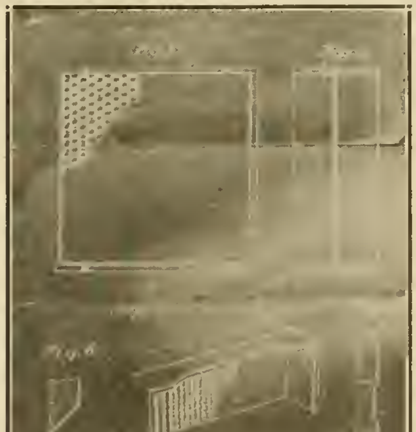
Ninety-six young queens averaged 3.97 frames of brood, in the spring, as against 3.75 frames for 30 old queens. These frames were mostly modified Dadant. The colonies with young queens averaged one pound of stores more, in the spring, than those with old queens. The young queens do not show up strong here. However, the time when the old queens fell down was in the heavy brood-rearing season.

One hundred and twelve colonies with five pounds or more of stores in the hive, at time of unpacking, averaged 4.1 frames of brood, while 44 that had less than five pounds averaged 3 frames of brood. This shows that as the stores are reduced, brood-rearing is restricted.

In one year, 17 colonies wintered on modified Dadant frames averaged 3.6 frames of brood in April, while 32 colonies on Langstroth frames averaged 3.1 frames of brood. The colonies on the deep frames consumed an average of 23.7 pounds of stores, while those on shallow frames used 24 pounds, each, during the winter. I am using the number of frames of brood as an index of the number of bees in the hive, and therefore of the strength of the colony. In the cool days of spring there is a close relation between the number of bees and the amount of brood. In the heat of summer the amount of brood, especially in small colonies, may be large in proportion to the number of mature bees. Results in this yard seem to indicate that the deep frame is a little the best for winter.

Fifty colonies, at one outyard, were packed in two long rows, the hives being placed close side by side, and observations made to determine the amount of drifting during the winter. So far as we could tell, there was no drifting, the strength of different colonies running about the same as the hives that were packed in pairs. However, the entrances were all distinctly separated from each other and plenty of markers, such as stones and sticks, placed in the front.

Kansas.



The split section on which patent was recently issued to Harry Hartman, of Braddyville, Ia., as mentioned in a recent issue.

## BEES KILLED BY SPRAY POISON

Dear Mr. Dadant:

I wish to inform you that last week two farmers here in this vicinity sprayed their apple orchards, just as the trees were going into full bloom, and as a consequence fully two-thirds of my bees were killed by this poison. Two more smaller bee yards were ruined. These farmers were told again and again not to spray while in full bloom, but pleading and even giving them honey was of no use. The loss to me, figured at the lowest, is at least $500, besides the loss of the honey crop, as no matter what I do, these bees cannot breed up in time for the clover flow. Besides many colonies are dead outright. It makes it all the harder for us, as we made our living from the bees. Is there no law, or cannot something be done to protect our bees? If this keeps on we might as well go out of the bee business. I wish, Mr. Dadant, you could have seen how the bees rolled out of the hives and how they suffered, and the whole bee yard was literally covered with dead and dying bees. They were never in finer condition than they were this spring.

G. A. Barbisch.

Minnesota.

(This is a very unfortunate affair. Those farmers ought to be punished, and there is a possibility that you might obtain damages, if the injury can be proved.

We tried to get a State law passed in Illinois upon spraying, a few years ago. But we had no positive evidence to produce, and the Committee of the Legislature refused to do anything until evidence could be produced. They argued that it was against the fruit grower's interest as well as the beekeeper's, to spray during bloom, and that is true, for there is more or less damage done to the pollen and to the pistil of the blossom by using poisons in spraying during bloom. Besides, the bees are useful in fertilizing the blossoms. Those farmers were not only wicked, but foolish, disregarding their own interests, under a mistaken idea that spraying during bloom would be useful.

Now would be a good time to get a law passed in Minnesota, especially if you could bring forward two or three similar cases. We would advise you to consult the State Apiarist at the Minnesota Agricultural College. Something should be done, and can be done, to prevent such another silly action in future.—Ed.)

# THE EDITOR'S ANSWERS

When stamp is enclosed, the editor will answer questions by mail. Since we have far more questions than we can print in the space available, several months sometimes elapse before answers appear.

### Number of Supers Per Hive

How many supers with the six and a quarter inch frames for extracting is it necessary to have for the modified Dadant hives, with good strong colonies in them? I am changing from the 8-frame to the modified. IOWA.

Answer.—We figure on the necessity of having an average of two supers per colony. But we have had as many as 5 supers filled by very strong colonies. In fact, we would hesitate to tell how much honey we have secured in this way from some good colonies, for fear of being disbelieved.

You will understand, of course, that much depends upon the locality and the season. But we know that you will secure tremendous crops, by the method we recommend.

We usually extract the spring crop (clover crop) before the summer crop comes. Sometimes we have been compelled to extract in the middle of the clover crop, because we disliked the idea of using more than 2 or 3 supers per colony.

### Poor Queen

I have a colony with an extra large leather queen whose brood does not seem to hatch good. This morning I found 2 and 3 eggs in a cell. What shall I do? WISCONSIN.

Answer.—I am of the opinion that your queen is deficient and had better be replaced. It is an unusual thing. But such things happen. It might even be that she does not lay at all and that those 2 or 3 eggs in a cell have been laid by laying workers.

A good experiment would be to place that queen in an observing hive—a hive with only one comb, and glass on both sides—and watch her. An observing hive is a delight, if you have any spare time at all. You can learn more in two weeks with one of them than you can learn in a whole year by reading bee books or magazines.

### Increase

1. Please advise which you find to be the best, natural swarming or artificial swarming? What is the best plan of artificial swarming?

2. What do you think of the "Demaree Plan" given in the May number of the American Bee Journal, on page 183? If this plan is used, how long is it necessary to leave the upper hive on above the other hive and the super, and what time is the best to remove the top hive? IOWA.

Answers.—1. I prefer artificial swarming because we can make just as many or as few as convenience indicates. It is not always possible to prevent natural swarming, but with the proper management there is very little of it.

2. The Demaree plan is good. It has been thoroughly tried, and although we do not use it with our deep-frame hives, yet we would recommend it for those who use Langstroth 10-frame or 8-frame hives. If you wish to divide with this plan, a good time to divide is when the young queen is about to hatch, or has just hatched, in the upper story. Then remove the lower story with the old queen and put this in a new spot, or place the two hives side by side on the old spot. In fact, you may do different ways, provided you see to it that both hives have enough bees and brood.

### Ventilation

I have made a practice of using a screen on top of my hives, in extremely warm weather, made of ordinary screen wire, and raising one end of the hive top on this screen to insure good ventilation. I am told that this is bad practice and that it is much better to merely raise the bottom of hives on blocks of 1 inch thickness. My hives have no shade except extra covering of boards that I put on when days are very hot. OKLAHOMA.

Answer.—That is probably a matter of locality. As a rule, however, we would not recommend the practice, because it requires your attention, should the weather turn cool. In some countries it would not be possible to do that at all. Even here, when we practiced giving upper ventilation, we found that the bees soon used their utmost endeavors to close it up, by bringing propolis.

In extremely hot days, we found this practice beneficial, as it enabled the bees to enter the hive instead of clustering outside. But I doubt that there be many nights when the bees would not prefer to have only bottom openings.

Using straw mats, as we do, laid over an oil cloth at the top of the hive, we find that, when the oil cloth has been cut by the bees, the light amount of ventilation which is allowed to pass through the mat causes the bees to avoid placing any honey next to that spot. There may be some other cause for that than undesired ventilation, but it indicates a faulty condition. Upon the whole, if we can make the bees comfortable by a large amount of bottom ventilation, we much prefer it.

### Barrels, Virgins, Vinegar, Etc.

1. What has been your experience in using barrels for honey? What kind are the handiest and best? I am able to get good barrels that have had molasses in them. Are they safe for honey? How can they be cleaned? How can a barrel be treated and know for sure it is safe for honey? I expect to use them for storing honey, as I do not take time to bottle it during extracting.

2. I expect to rear what queens I will need this season, but I am puzzled how to manage virgin queens that have emerged in nursery cages and get them successfully introduced and laying.

3. Please suggest a good name for a side line apiary. I live in the corn belt region where mixed farming is generally carried on.

4. In the February American Bee Journal, page 51, "The Honey Regions of Indiana" was very interesting. Can we not get a map worked out showing the most important honey regions in Illinois? I would like to get one if possible. Does not our State lag in beekeeping?

5. In a back number of the American Bee Journal a very good direction was given for making honey vinegar. I am unable to find it. Please tell me where to look, or give me the directions how to proceed. ILLINOIS.

Answers.—1. Molasses and syrup barrels have never given us satisfaction. They are usually 6-hoop barrels and made of soft wood. They shrink and swell too readily with the changes of atmospheric moisture. It is possible, however, that some of them might be used if very dry when emptied of the syrup and kept dry afterwards. Drain them out thoroughly, in hot weather, and avoid using much water in cleaning them out. We use alcohol barrels.

2. The virgin queens are much more difficult to introduce than laying queens. For this reason we always hatch our young queens in nuclei and have them fertilized before using them. If you must introduce them, give them to small colonies containing mainly young bees, and do the introducing as early as possible after the queen emerges from the cell.

3. We call our outapiaries by the name of the farm or the farmer at whose farm they are located. If you want a fancy name, better have the ladies select it. They are better at it than we are.

4. Yes, our State is rather lagging behind in beekeeping. Yet we have everything that could make it a leader. We may be able to make out such a map as you suggest within a year or so.

5. The method for making honey vinegar was given in September, 1915, page 314; October, 1917, page 345; and a method to make over insufficiently fermented vinegar, in August, 1918, page 277.

### Unusual Conditions

Looking through a few colonies of bees belonging to a lady friend, one colony was found in which there was no brood, eggs or any evidence that there had been queen-cells. I went carefully over the combs twice, but could find nothing resembling a queen.

A frame of eggs and larvæ was taken from another colony and inserted in the middle of the brood nest. Making a visit a week later, I expected to find cells built. Not a one; brood nearly all sealed. The frames were given the double go-over again. No eggs. No queen to be found.

Again a frame of eggs and larvæ of all ages was given, and upon my next visit, about a week later, the same conditions were found as upon the previous visit. A search was made again. No eggs or queen.

A few days later a wild swarm of hybrids was caught and was run into this hive with no preliminaries whatever. They were welcomed, black queen and all. Was this bunch trying to commit suicide? NEW YORK.

Answer.—Likely the colony in question was discouraged, and for that reason inactive. It is a rare case of neglect, on the part of the workers. It tends to indicate that there were no young workers among them and that they were at a loss to produce pap or jelly. Yet, after two introductions of brood there should have been enough young bees hatched to take an interest in queen-rearing.

### Bee Trees, Size of Hives

1. Could you tell me what shares are customary for cutting bee trees, where you do all the work yourself (wanting the bees yourself)?

2. Does white clover bloom the first year after planting?

3. Which is the best for comb honey, 8 or 10-frame hives? KANSAS.

Answers.—1. I have never seen this matter settled in practice. I have cut only two or three bee trees in my young days, and in each case the owner of the land simply asked that I cut up the tree into useful lengths, as his pay. After all, we are not allowed to cut a tree on another man's land without his consent.

A little book entitled "Bee Hunting," which we think is now out of print, says this about the rights of a bee hunter:

"Merely finding a *bee* on the land of another and marking the tree does not vest the property of the bees in the finder. *They do not become private property until they are in the hive.* True sportsmen do not think of going to law for adjustment of these matters, but rather depend on that fraternal spirit by which all questions relating to ownership are settled amicably."

So this matter must be settled amicably. As a rule, the owner of the land will not care for a share of the bees, and probably a share of the honey found would be acceptable. Sometimes there is little honey, and the bees are the only valuable property in the tree, outside of the wood.

2. White clover generally blooms in the latter part of the season in which it has been sown. Its full bloom occurs only the second year.

3. Dr. C. C. Miller succeeded well with 8-frame hives, by using two hive-bodies for breeding until the crop was on, when he removed one of them, leaving the best brood-combs in the one hive and adding a sufficient number of supers. But this requires many manipulations. Better have 10-frame hives.

### Distance Bees Fly

How far will a bee go to gather honey? I live in town and there are 80 acres of sweet clover north of town. Just a mile west is another large field, but it is 3 miles, and south another 40 acres a mile and a half away. Is this too far away for my bees?

NEBRASKA.

Answer.—There is a disagreement among leading beekeepers as to how far bees will go to gather honey. Doolittle and one or two others claimed that bees would readily go 7 or 8 miles, while many others, as well as ourselves, believe that 2 or 3 miles is the extent of their flight for honey, except in extraordinary circumstances. It is probable that, if bees are baited to a spot by finding flowers along the way, they may be drawn quite a distance.

We would suggest that your bees would go to the two fields that are the closest. If you find them at the farthest field, we would like to hear about it. They certainly fly farther when they follow a valley than when they have to go over hills, especially if the hills are covered with timber.

### Two Queens in One Hive

Here is my experience in finding two queens in one 10-frame hive: This colony was one of the strongest in the apiary, a good laying queen present; later, on examining, I cut cells. In next examination I found two queens and could not tell if one was an old queen or not; one on each side of hive, on comb of eggs. I took out one queen and frame of bees and put a full sheet of foundation near the center. On later examination I found the foundation had not been drawn out; the hive was fairly filed with eggs and brood in all stages, with a fine queen on each side. The first queen which I took from this hive did not lay any eggs, although she would go through the act of backing into a cell.

I believe that the flow of nectar stopped, so the bees did not draw out the foundation, and this acted as a division-board, causing the bees to rear a third queen, or else there were three queen present and I found only two What do you think of it? I have two queens left of this hive yet.

ILLINOIS.

Answer.—The probability is that you had taken out the old queen and that there had been two queens reared to take her place. Your surmise that the sheet of foundation acted as a division-board is probably correct.

### New Things That Are Old

For want of reading the ancients, one often gives as a novelty something that was already the town talk in the days of Aristotle.—Huber, February, 1805.

## ODDS AND ENDS

### New Sweet Clover Bulletin

A bulletin entitled "Annual White Sweet Clover and Strains of the Biennial Form," has recently been issued from the press of the U. S. Department of Agriculture. It is written by A. J. Pieters and L. W. Kephart. This bulletin gives some interesting information about the annual white sweet clover, which has attracted such wide attention during recent months, and also regarding the early blooming variety of the biennial form called "Grundy County Sweet Clover." This last is the same which the American Bee Journal has distributed free samples of so widely. We have also sent out numerous samples of the annual as well.

We would suggest that any of our readers interested in these new sweet clovers write at once the U. S. Department of Agriculture and ask for Department Circular 169.

### A Good Record

L. A. Coblentz and wife, of Rigby, Idaho, have sold directly to the consumer more than 100,000 pounds of honey since August, 1920, at good prices. They have not been content with the low wholesale prices now offered, neither have they been willing to sell their honey at retail for less than the prevailing retail prices. By going directly to the consumer with their product they have increased their income in proportion by adding the profit of selling to the profit of production.

### Linen From Sweet Clover

A newspaper clipping reaching this office refers to the sweet clover plant as a possible source of fibre suitable for a substitute for linen. The fibre is described as long and silky as well as strong enough to insure good wearing qualities in the finished cloth. Once despised, sweet clover is proving its value as a forage crop and soil builder to such an extent as to insure its permanent place in American agriculture. Should it prove to be valuable for fibre as well, its cultivation would be further extended.

### A New Inspector for Utah

Because of ill health, Frank B. Terriberry asked to be relieved of the duties as State Inspector of Apiaries in Utah, and Dan H. Hillman has been appointed in his stead. Mr. Hillman is already at work.

### Apis Fasciata

The October-April number of the Bee World contains an article upon the Egyptian bee (**Apis fasciata**) which is worth the price of the year's subscription to anyone who desires to study foreign races. I doubt that so exhaustive an article concerning that bee was ever published. It was translated from "Der Deutsche Imker" by Miss Annie D. Betts.

The descriptions and explanations given concerning this bee show conclusively that it is not fitted for our climate, for "the habit of not collecting stores has become a plainly hereditary quality." The reason is that, in Egypt, the bees do not need it.

### The Joy of Beekeeping

"The joy of beekeeping is not in pounds, shillings and pennies. One loves the little insects for what they are and what they do. They love flowers, so should we; they love order, so should we; they love cleanliness, so should we; and since all this is so, may we never use the delicate winged creatures merely as an excuse for advertising, and may the "Bee World" and its sister periodicals ever open their pages to all the joys that soulful beekeeping brings in its train." (Rev. E. F. Hemming in "Bee World," page 9.)

### Wisconsin Grading Law

Some months ago we made mention of the fact that Wisconsin requires all honey sold in the State to be graded and stamped with the grade, or labelled "ungraded." Newspaper clippings received at this office convey the news that two retail grocers have recently been fined for selling honey without such label and that the beekeepers who sold the honey to the grocers are also in line for similar treatment.

### A Valuable Publication

The first annual report of the Division of Apiculture of the State of Washington has recently come to the editor's desk. A. L. Melander, State Entomologist, has the beekeeping work in charge and in this his first official report has brought together a large amount of information of value to the beekeeper. The report contains 119 pages and gives a splendid outline of Washington beekeeping conditions. Almost every question presenting itself relating to that State is answered somewhere in the book. An extended list of the honey flora in the various districts is a valuable feature.

This publication is distributed free to residents of Washington and sold at 40 cents per copy to others. It can be obtained from Dr. A. L. Melander. State Entomologist, Pullman Wash.

### An Interesting Report

Through the kindness of A. H. E. Wood, we have recently received a copy of the report of the Aberdeenshire and Kincardinshire Beekeepers' Association, of Scotland. It shows a wonderful growth from 95 members in 1910, to 1,646 in 1920. With the exception of one year during the war, there has been an increase in membership with every report, and a great advance since the close of the conflict. Eigthy-seven branch organizations are listed with the list of members of each.

When the small area represented is considered, the showing is remarkable and much beyond that of any similar organization in America. The Association conducts numerous educational projects, holding exhibitions, maintaining a library for the use of members, sending out experts to render assistance, and similar activities.

### Bad Spring in Vermont

It has been a hard row for the bees in Northern Vermont this spring. We have been dried out and frozen up. No fruit bloom, and a small stand of dandelions made it necessary to feed heavily to get the bees up to full strength. (May 19).

C. H. Carpenter.

### Third Beekeepers' Chautauqua

Prof. H. F. Wilson, of the Wisconsin State University, announces that their third annual beekeepers' summer meeting will be held at Chippewa Falls from August 15 to 20. In addition to a number of prominent Wisconsin beekeepers at least three speakers are expected from outside the State. Those so far announced are Dr. E. F. Phillips, of Washington; E. R. Root, of Ohio, and C. P. Dadant, senior editor of this Journal.

The previous summer meetings have been very interesting and successful, and a good attendance is expected at Chippewa Falls.

### Stingless Bees of Central America

"Leaving Santa Cruz, our trail led northward, and a few minutes after leaving town we crossed a small river which was of considerable size at that time, but it completely dries up in the dry season. We passed several palm-thatched huts along the roadside, and many of them had hollow logs about 4 feet long hanging to the roofs of the huts, and out of the end small bees could be seen to enter and leave. We wondered why the children did not get stung, but learned that the bees have no stings. They are about the size of large house flies and have a pretty striped body, but no sting. The hives are made of hollow logs suspended to the tops of the huts to keep the ants from eating the honey. A board is stuck into the end and a hole about an inch in diameter in the center is used for the exit. When it is desired to rob the hive, the board is removed and the honey taken out, and then it is replaced as before."—Onward, San Jose, Costa Rica, March, 1921.)

### To Paint Foundation

To paint beeswax on foundation to furnish additional support, I use a small atomizer made of metal. It sends the finest spray of wax. I use it also on aluminum combs. This machine was used for spraying "amberine," which is made mostly of beeswax, to make an artificial skin over bad burns.—Lillian E. Bland, British Columbia.

### Pollen Depositing

What a delight it is to read a writer like John Burroughs! He can give you a new idea of something you have seen before. Listen:

"When a bee brings pollen into the hive, he advances to the cell in which it is deposited and kicks it off as one might his overalls or rubber boots; making one foot help the other. Then he walks off without ever looking behind him; another bee, one of the in-door hands, comes along and rams it down with his head and packs it into the cell as the dairy maid packs butter into a firkin."—The Pastoral Bees.

Burroughs, like Roosevelt, was a universal nature observer, and his observations are nearly always correctly rendered, but with an artless simplicity which appeals to the casual reader and which is to be envied.

### Keeping Quality of Beeswax

Mr. James Johnson, of Pocahontas, Ark., sends us a sample of beeswax rendered at Galena, Ohio, in 1880, by Mrs. Joe Scratz, with the question as to how long it would keep. This sample is apparently not different, after 41 years, from wax rendered last year. As far as we know, there is no reason why beeswax should not be as good after a thousand years, if kept in a clean, dry place. In fact we understand that wax that was much older than that has been recovered from ancient cities.

### New York Reports

New York produced 3,223,323 pounds of honey in 1919. Number of colonies has decreased from 156,360 in 1909, to 127,858 in 1919. The per colony average for 1919 was 25 pounds.

### Tongue and Sting

Anger a woman, you shall learn the length of her tongue; vex a bee, it will give you the length of its sting. Offer sweet words and things to either, you shall enjoy peace.—(R. Stanistreet, in Irish Bee Journal).

CALIFORNIA ITALIAN QUEENS

The old reliable three-band stock that delivers the goods. This stock is descendant from the A. I. Root Co.'s best breeders. Then the J. P. Moore long tongue, red clover strain was added. Next some of Doolittle's famous stock was secured, one breeder in particular, one which was selected by Mr. Doolittle himself and caged with his own hands a short time before his death, proved extra remarkable. This season the Jay Smith strain has been secured, and these are proving equal, if not superior, to anything I have ever seen. In order to keep running to maximum capacity till fall, I am offering

SPECIAL PRICES FOR JUNE, JULY, AUGUST AND SEPTEMBER

Delivery June 15 to October 1, for orders booked in advance:

Select Untested ------------ ----- 1, $1.25; 6, $7.00; 12, $13.00; 25 to 50, $1 each; 100, 90c each

Tested ------------------------- 1, $1.75; 6, $10.00; 12, $18.00

Superior breeder, 1 year old, $5.00

Every queen actually laying before being caged, and fully guaranteed. I also guarantee safe arrival in United States and Canada. Circular free.

155 SCHIELE ST. J. E. WING SAN JOSE, CAL.

## CLASSIFIED DEPARTMENT.

Advertisements in this department will be inserted for 5 cents per word, with no discounts. No classified advertisements accepted for less that 35 cents. Count each initial or number as one word.

Copy for this department must reach us not later than the 20th of each month preceding date of issue. If intended for classified department it should be so stated when advertisement is sent.

### BEES AND QUEENS

QUEENS ON APPROVAL—Bees by package or colony. Tested queen, $2; select untested, $1.50; all other grades, $1. Bees without queen, 1 lb., $3; 2 lbs., $5; colony, $10.
Birdie M. Hartle,
924 Pleasant St., Reynoldsville, Pa.

MY famous three-banded Italian queens, $1.50 each, 6 for $8, after June 1.
J. W. Romberger, Apiarist,
3113 Locust St., St. Joseph, Mo.

QUEENS ON APPROVAL—Bees by package or colony. Tested queens, $2; select untested, $1.50. All other grades $1. Bees without queen, 1 pound, $3; 2 pounds, $5; colony, $10. A. M. Applegate,
840 Main St., Reynoldsville, Pa.

SIMMONS QUEENS, bees and nuclei, goldens and three-band.
Fairmount Apiary, Livingston, N. Y.

HARDY ITALIAN QUEENS, $1 each.
W. G. Lauver, Middletown, Pa.

FOR SALE—Unsurpassed Italian queens, ready June 1; untested, $1.50; 6, $7.50; 12, $14; 50, $55; 100, $105. Tested, 1, $2.50; 6, $13.50. My queens are actually laying before they are sent out.
J. D. Harrah, Freewater, Oregon.

FOR SALE—Hardy northern bred Italian queens and bees, each and every queen warranted satisfactory. For prices and further information write for circular.
H. G. Quirin, Bellevue, Ohio.

BEES AND QUEENS from my Carolina apiaries, progeny of my famous Porto Rican pedigreed breeding stock.
Elton Warner, Asheville, N. C.

SWARTS' Golden queens produce golden bees of the highest quality. Untested, $1.50 each, 6 for $8. Satisfaction guaranteed.
D. L. Swarts, Lancaster, Ohio, Rt. 2.

FOR SALE—Leather colored Italian queens, tested, until June 1, $2.50; after, $2. Untested, $1.25; 12, $13. Root's goods at Root's prices. A. W. Yates,
15 Chapman St., Hartford, Conn.

FOR SALE—Root's strain of golden and leather-colored Italian queens; bees by the pound and nuclei. Untested queens, $1.50 each; select untested, $2 each; tested, $2.50 each; select tested, $3 each. For larger lots write. Circular free. A. J. Pinard,
440 N. 6th St., San Jose, Calif.

WE are booking orders for our golden Italian queens for spring delivery after April 15. Untested queens, 1, $1.50; doz., $15; select untested queens, 1, $1.75; doz., $18; virgin queens, 1, 75c; doz., $9; tested queens, 1, $3; doz., $36. Safe arrival guaranteed.
Tillery Brothers, Georgiana, Ala.

BOOK YOUR ORDERS for QUEENS now—Goldens, $2; tested, $3; banded, $1.50; tested $2.50; six or more, 10 per cent less.
Clover Leaf Apiaries, Wahoo, Neb.

EDSON APIARIES now booking orders for queen bees for delivery during season of 1921. Prices: One untested queen, $1.75; 50 untested queens, $57.50; 100 untested queens, $100. Orders filled in rotation; first shipments March 1, 1921.
Edson Apiaries, Gridley, Calif.

BEES AND QUEENS from my New Jersey apiary. J. H. M. Cook,
1Atf 84 Cortland St., New York City.

GOLDEN and 3-banded Italian queens; tested, $1.25; untested, $1. No disease. Safe delivery and satisfaction guaranteed.
C. B. Bankston, Buffalo, Texas, Box 65.

HIGH GRADE ITALIAN QUEENS Send for catalog.
Jay Smith, R. 3, Vincennes, Ind.

BEES BY THE POUND, ALSO QUEENS Booking orders now. Free circular gives prices, etc. See larger ad elsewhere.
Nueces County Apiaries, Calallen, Texas,
E. B. Ault, Prop.

FOR SALE—Golden Italian queens, tested queen, $3; untested queen, $1.25.
J. F. Michael, Winchester, Ind.

WILL SHIP a few choice queens with frames of brood, $4 each. Jes Dalton,
Bordelonville, La.

FOR SALE—Golden or 3-banded queens, untested only. Safe arrival and satisfaction guaranteed. Prices till July 15: One, $1.50; six, $8; dozen, $15.
Ross B. Scott, La Grange, Ind.

WE believe we have the best Italian queens obtainable. Our new system is working wonders. Book your order now for 1921. Untested, $1.50; tested, $3; virgins, imported mothers, 50c. F. M. Russell, Roxzury, Ohio.

PRITCHARD QUEENS—(Three-banded Italians) price, untested, $1.50; 6 for $8; select untested, $1.75; 6 for $9.50. A liberal discount will be given on larger quantities. I will have a few choice virgins, tested, and breeders to spare. Write for prices. Queens clipped free of charge on request. Acknowledgement and directions for introducing sent on receipt of order. Safe delivery and satisfaction guaranteed. Specify date of shipment desired, otherwise orders will be filled in rotation.
Arlie Pritchard, Rt. 3, Medina, Ohio.

QUEENS—3-banded Italian, select untested, $1.25 each; tested, $2 each.
Carl L. Wilson, 2010 S. Boots St., Marion, Ind.

CARNIOLANS—Gentle, prolific, wonderful honey gatherers. Descriptive circular free. Untested queens, $1.50 each; $17 per dozen. July is an excellent time to requeen.
A. G. Hann, Glen Gardner, N. J.

HIGH QUALITY QUEENS at reduced prices. Three-banded Italians, reared from best hustlers, non-swarming, gentle and prolific. Can ship by return mail. Satisfaction guaranteed. Health certificate with each shipment. Untested, 1 to 10, $1 each; over 10, 90c each. Select untested, 1 to 10, $1.25 each; over 10 $1.15 each. Tested, $1.75 each
Frank Bornhoffer, Rt. 17, Mt. Washington, O.

TRY my Caucasian queens, $1.25 each; hybrids 35c each. Peter Schaffhauser,
Havelock, N. C.

QUEENS from imported mothers after July 1, untested, $1.35; 6, $8; 12, $15.50. Tested, $2. Lewis beeware at new prices. Catalog free. R. Kramske,
1104 Victor St., St. Louis, Mo.

SELECT QUEENS only. Three-band and leather colored Italians. Tested, $2.50; untested, $1.25 each.
Geo. W. Coltrin & Son, Mathis, Texas.

FOR SALE—Leather Italian queen, untested, $1; select untested, $1.25; one to three-frame nuclei, $3.75 to $5. Three-pound package bees, $4, without queens.
Tupelo Honey Co., Columbia, Ala.

ITALIAN QUEENS, $1 each, or $10 per doz., after June 1. Will book a few more three-frame nuclei of black or hybrid bees with Italian queen, for delivery after June 15, at $5 each, or 3 lbs. bees on frame of honey for $4.25. These will be fine to winter for early spring work. Otto Diestel, Elza, Ga.

DAY-OLD QUEENS—1, 50c; 100, $50; 500, $250. Untested queens, $1 each. High quality 3-banded Italians. Mailed in safety introducing cages. Delivery and satisfaction guaranteed in U. S. and Canada. Information in circular. Order early
James McKee, Riverside, Calif.

HUMMER QUEENS—Untested, $1 each, $9 per dozen. Tested $1.50 each, $15 per dozen. A trial will convince you that they cannot be beaten. Safe arrival and satisfaction guaranteed. Nuclei at same old price.
Geo. A. Hummer & Sons, Prairie Point, Miss.

FOR SALE—Golden Italian queens, untested, $1.15, 6 for $6.50; 12 or more, $1 each; tested. $2 each; select tested, $3 each; extra select tested, $4 each. No bees for sale.
D. T. Gaster, Randleman, R. D. 2, N. C.

FOR SALE—Achord queens, 1 and 2 years old, 50c each.
W. A. Latshaw, Clarion, Mich.

FOR SALE—3-banded Italian queens, untested $1.25 each; 6, $6.50; 12, $12. Select untested, $1.50 each. Satisfaction guaranteed.
W. T. Perdue & Sons,
Rt. No. 1, Fort Deposit, Ala.

FOR SALE—Golden Italian queens, untested, 1, $1.25; 6 $7.
E. A. Simmons, Greenville, Ala.

THREE-BAND and GOLDEN QUEENS—Reared in separate yards. Order from us and get pure stock for your summer and fall requeening. At our special price, beginning July 1, untested, $1.50 each; 25 at $1.25 each; tested, $2.50 each. We have a good number ready for shipment and will fill your order promptly. Dr. White Bee Co.,
Sandia, Texas.

FOR SALE—About 300 colonies of bees in 8 and 10-frame hives, together with full equipment; good territory and no disease.
Elton S. Stinson, Rt. 2, Huston, Idaho.

YOU CAN SAVE queens by using All Right push-in comb introducing cage, 25c, post paid. O. S. Rexford, Winsted, Conn.

ITALIAN QUEENS—Three-banded, select untested, guaranteed. Queen and drone mothers are chosen from colonies noted for honey production, hardiness, prolificness, gentleness and perfect markings. Price after July 1, $1.25 each; one dozen or more, $1 each. Package bees a specialty. Send for circular.
J. H. Haughey Co., Berrien Springs, Mich.

CHOICE ITALIANS—Select queens, tested, $2.50; untested, $1.25 each.
Geo. W. Coltrin & Son, Mathis, Texas.

BRED strictly from the Dr. Miller granddaughter queens, one for $1.25, 6 for $7.25, 12 for $14. Selects 25c each higher. Tested just double price of untested. Breeders $5, select breeders $7.50 to $10 each, the best breeders $15 each. One frame nucleus with breeder for $1 extra.
Curd Walker, Jellico, Tenn.

QUEEN BEES—Allen's 3-banded Italians, disease free; the ones that get results. Price, each, $1.50. J. H. Allen,
Orr Station, Anderson, S. C.

FOR SALE—Golden queens, untested, $1.25; tested, $1.50; breeders, $5.
J. B. Marshall & Son,
Rosedale Apiaries, Big Bend, La.

FOR SALE—Italian queens, untested, 1 for $1.25, 6 for $7, 12 for $13.50. Tested, $2. Mismated queens will be replaced if returned in 30 days; dead queens will be replaced if returned by return mail. I have tested breeder from the A. I. Root Co., and will breed queens from her for those that prefer them to my old strain of hustlers.
R. B. Grout, Jamaica, Vt.

FOR SALE—Burleson's three-banded Italian queens. The kind of bees that get the goods. Guaranteed to please or money back. For balance of season as follows: 1 select untested queen, $1.25, 6 for $7, 12 for $13.50, 100 or more $1 each. Send all orders, together with remittance, to J. W. Seay, manager, Mathis, Texas.
T. W. Burleson, Waxahachie, Texas.

FOR SALE—Famous strain of queens of Geo. B. Howe, A. I. Root, Jno. M. Davis three-banded bees, and we also sell extra fine goldens, bees that are bees, both in beauty and wintering. and disease-resisting; not surpassed for honey-gathering, or at least we have not been able to find any that were their superior. Untested, 1 queen, $2.50; 6, $12; 12 queens, $20; 25 queens, $40; 50 queens, $70. Try our queens. Also, we shall sell 2-lb. packages, 3-lb. packages with queens for 1922. We try and give prompt service; queens by return mail if we possibly can do so.
H. B. Murray, Liberty, N. C.

FOR REQUEENING use Williams' heavy laying Italian queens; they produce hardy, hustling three-banded workers. Bred from the best disease-resisting strain, and priced in accordance with the present price of honey. Untested, $1.25, 6 for $6.50, 12 or more $1 each; tested, $2. Satisfaction guaranteed.
P. M. Williams, Ft. Deposit, Ala.

FOR SALE—Three-banded Italian queens, untested, $1.25 each; 6, $7.50; 12, $14. Tested queens, $2.50 each; 6, $15. The above queens are select stock. Safe arrival and satisfaction guaranteed.
Rob't B. Spicer, Wharton, N. J.

COLONIES of Italian bees in good standard hives. A-1 in all respects. Write for prices. Satisfaction guaranteed.
Van Wyngarden Bros., Hebron, Ind.

FOR SALE—Vigorous leather-colored Italian queens, famous three-banded stock; untested queens, $2 each; tested, $3; untested queens per dozen, $20. Order early.
C. M. Elfer, St. Rose, La.

FOR SALE—Highest grade three-banded Italian queens. Select untested, 1, $1.25; 6, $6.50; 12, $12; 50, $47.50; 100, $90. Virgins, 45c each. No disease, and satisfaction guaranteed. A. E. Crandall, Berlin, Conn.

FOR SALE—Italian queens, $2 each; select tested, $4. F. Barber, Lowville, N. Y.

FOR SALE—Three-banded Italian queens from best honey-gathering strain obtainable (no disease), untested queens, $1.25 each; 6, $6.50; 12, $12; select untested, $1.50 each; 12, $14. Safe arrival and satisfaction guaranteed. Your orders filled promptly.
Alabama Bee Co., Rt. 1, Fort Deposit, Ala.

WE are offering for remainder of season our bright Italian queens, untested at $1 each, $10 per dozen, $75 per hundred. We guarantee safe arrival, pure mating and reasonable satisfaction in United States and Canada. Cash must accompany all orders unless parties are known or satisfactorily rated.
Graydon Bros., Rt. 4, Greenville, Ala.

CALIFORNIA ITALIAN QUEENS at special prices. After June 15 and to October 1, 1, $1.25; 6, $7; 12, $13; 25 and over, $1 each; 100, $90. See larger ad elsewhere. Circular free.
J. E. Wing, 155 Schiele Ave., San Jose, Cal.

NUCLEI—We make a specialty of shipping 2-frame nuclei. Write for special prices for June delivery. Queens at the following prices: Untested, $1.50 each; 6, $8; 12, $15; 50, $60; 100, $100. Tested queens, $2.50 each.
Cotton Belt Apiaries, Roxton, Texas.

FOR SALE—Fine tested queens, year old, $2; Silver Spangled Hamburg chickens and eggs; rare old violin.
Elias Fox, Union Center, Wis.

THE ITALIAN QUEENS OF WINDMERE are superior three-banded stock. Untested, $1.50 each, 6 for $8; tested $2.50 each; select tested, $3. Prof. W. A. Matheny,
Ohio University, Athens, Ohio.

LARGE, HARDY, PROLIFIC QUEENS—Three-band Italians and goldens, pure mating and safe arrival guaranteed. We ship only queens that are top notchers in size, prolificness and color. After June 1, untested queens $1.60 each, 6 for $8, 12 or more $1.40 each, 26 or more $1.26 each. Tested queens $3 each, 6 for $16.
Buckeye Bee Co., Justus, O.

QUEENS—I am now offering queens at pre-war prices. Untested, 1, $1.25; 25 or more, $1 each.
W. H. Moses, Lane City, Texas.

## HONEY AND BEESWAX

WHITE sweet clover honey with small per cent of basswood, in 5-gallon cans, case of 2 cans, $14, one can $7.50. Ten cases at 10c per pound. Sample 10c. C. S. Engle,
200 Center St., Sioux City, Iowa.

HONEY—16c per pound. Walter Reppert,
Gen. Deliv., Shreveport, La.

FOR SALE—Choice clover extracted honey. State quantity wanted.
J. D. Beals, Oto, Iowa.

FOR SALE—Very fine quality basswood-milkweed (mostly milkweed) honey in 60-pound cans. P. W. Sowinski, Bellaire, Mich.

FOR SALE—Extracted honey. Write for prices. A. L. Kildow, Putnam, Ill.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendering. Fred W. Muth Co.,
204 Walnut St., Cincinnati, Ohio.

HONEY FOR SALE—In 60-lb. tins, immediate shipment f. o. b. New York. California white orange, 18c lb.; California white sage, 16c lb.; white sweet clover, 15c lb.; light amber sage, 12c lb.; West Indian light amber, 10c lb. Hoffman & Hauck, Inc.,
Woodhaven, N. Y.

WANTED—Six thousand pounds of off-grade, extracted amber honey. Submit sample and quote price f. o. b. Terre Haute, Ind.
W. A. Hunter, 119 S Third St.

FOR SALE—New crop fancy white comb honey, No. 1, $7 per case of 24 sections; No. 2 grade, $6; clover extracted honey, 15c per pound; amber and buckwheat, 12½c, two 60-lb. cans to case; amber in 50-gallon barrels, 10c per pound.
H. G. Quirin, Bellevue, Ohio.

HONEY WANTED—Give particulars in first letter. Elton Warner,
"Beaverdam," Asheville, N. C.

NEW HONEY soon, best quality, reasonable prices, any quantity.
E. F. Atwater, Meridian, Idaho.

## SUPPLIES

SAVE MONEY on your shipping cases, tin and glass honey containers, etc. Our free price list tells you how. If you rear queens for sale, be sure to send for our price card of mailing cages. The Rattery-Hamilton Co.,
Almont, Mich.

WESTERN BEEKEEPERS—We can demonstrate that you can save money on buying bee supplies of best quality. Write for our latest price list.
The Colorado Honey Producers' Association,
Denver, Colo.

HAVE YOU any Bee Journals or bee books published previous to 1900 you wish to dispose of? If so send us a list.
American Bee Journal, Hamilton, Ill.

BEEKEEPERS—Sag proof Hoffman frames, regular depth, corner cut, end bars drilled (not pierced), metal eyelets easily inserted. Price, with eyelets and nails, per 100, $8.90; 500, $42.85. Shipping cases, basswood, 24 lbs., holding 24 sections; price, with nails and corrugated paper, per 10, $6.90; 50, $31.80; 100, $61.50. Price, with 2-inch glass, 5c per case extra. State size. Satisfaction guaranteed.
Emil J. Siemers, Eau Claire, Wis., Box 204.

BARGAINS IN SUPPLIES—Ten-frame hive-bodies, each 67c; 8 frame, 64c. Ten-frame hive-covers, each 42c; 8-frame, 40c. Ten-frame bottoms, each 41c; 8-frame, 39c. Order at once. Write for further particulars, if wanted.
W. J. Foreband & Sons, Fort Deposit, Ala.

CLOSING OUT—Best No. 1 sections, per 500, $6.45. No. 2, $5.85. Special prices on other goods.
H. S. Duby, St. Anne, Ill.

FOR SALE—Hives, frames, supers, covers, bottoms and odd size hives and frames made to order. Write for money-saving prices on what you need. I can save you money.
F. D. Bowers, Sugar Grove, Pa.

## FOR SALE

FOR SALE—Several hundred used 60-pound honey cans, 2 to the case. Used only once, 65c each. P. H. Outzen,
White Bear Lake, Minn.

FOR SALE—Cedar or pine dovetailed hives; also full line of supplies, including Dadant's foundation. Write for catalog.
A. E. Burdick, Sunnyside, Wash.

FOR SALE—20 colonies Italian bees, in good shape, in 8 and 10-frame modern hives.
A. C. Gould, Weston, W. Va., Rt. 4.

FOR SALE—Power hive-making saw, $30; typewriter, $10; Peterson capping melter, $6; lathe, $3; 3x5 printing press outfit, $8.
Clarence Foote, Delanson, N. Y.

FOR SALE—Ill health; sell or lease; 50 clean colonies, mostly golden and leather colored Italians in 8 and 10-frame standard painted hives. 85 new 8 and 10-frame cedar standard hives, painted, wired foundation. 50 section supers ready for the bees. 20 covers and bottom boards, painted; 500 4¼x4¼ sections. Tools, etc.; no junk. Best fireweed location. If taken at once, $900 cash.
Paul Jackson, Klaber, Wash.

FOR SALE—Novice 2-frame extractor, $27; 5 Ideal super section starters, 8-frame, $10.
S. Collyer, Black Mountain, N. C.

FOR SALE—Two-frame Cowan reversible extractor; cost $45 last fall, goes for $30. Will handle 12-inch frame.
Jack Trayer, Cottonwood Falls, Kans.

FOR SALE—"Superior" Foundation (Weed process). Quality and service unexcelled.
Superior Honey Co., Ogden, Utah.

## WANTED

WANTED—We have many calls from educators for copies to complete their files of the older Bee Journals. If you have complete volumes or miscellaneous numbers of any Bee Journals previous to 1900, write us, giving a list, and we will be glad to quote a price. Old bee books, now out of print, are also desirable. We act as a clearing house for this kind of materials.
American Bee Journal, Hamilton, Ill.

WANTED—Bees in colonies, comb and extracted honey. Frank Coyle, Penfield, Ill.

WANTED—Beeswax, old combs and cappings for rendering on shares. Also wax accepted for trade. Top market prices offered.
A. I. Root Co., Council Bluffs, Iowa.

WANTED—Your order for "Superior" Foundation. Prompt shipments at right prices.
Superior Honey Co., Ogden, Utah.

## SITUATIONS

WANTED—Man with some experience to work with bees coming season. State age, experience and wages wanted, based on our furnishing board.
The Rocky Mountain Bee. Co.,
Box 1319, Billings, Mont.

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SAMPLE FREE—They say "It's as good now as when Hutchinson ran it." Under new ownership, our bee journal is growing fast, better every issue, a "different" kind of a journal. Let's get acquainted. $1.50 a year, and worth it.
The Domestic Beekeeper, Lansing, Mich.

WRITE for prices on two and three-frame nuclei and queens, cypress hives and frames.
Sarasota Bee Co., Sarasota, Fla.

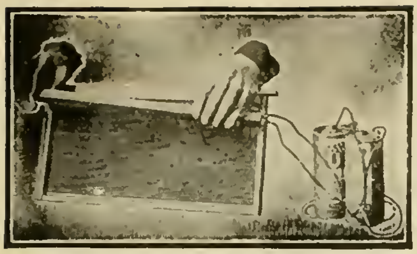
LEAGUE EMBLEMS—We still have a number of U. S. Beekeepers' emblems, buttons or pins, bronze or gold. Send 50 cents and get one
American Bee Journal, Hamilton, Ill.

BLACK SIBERIAN HARES—Enormous sizes, delicious meat and beautiful fur. Write for information and prices.
Siberian Fur Farm, Hamilton, Canada.

DR. MILLER'S BEE SONGS are in "Songs of Beedom." Ten songs for 20 cents, postpaid; 2-cent stamps taken. Also Teddy Bear souvenir postal cards, 10 for 10 cents. Address Geo. W. York, Box 84, Spokane, Wash.

### Michigan Summer Meet

At Alpena, August 3 and 4, Ernest Root, Geo. S. Demuth, E. W. Atkins and B. F. Kindig are on the program. These meetings are always well attended. Alpena is in the northern part of the lower peninsula, where beekeepers can see the possibilities of that region.



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**Price without Batteries, $1.50**
Not postpaid.

Actually cements wires in the foundation. Will work with dry cells or with city current in connection with transformer. Best device of its kind on the market.

**For sale by all supply dealers.**

**Dadant & Sons,** Manufacturers HAMILTON, ILL.

WESTERN

## BEE HIVES

**Manufactured from**

**Red Cedar and White Pine**

Made with lock corners.

Standard sizes kept in stock. Odd sizes made to order.

Write us for prices on anything you may want.

**WILLIAMS BROS.**

5125 E. 82nd St., S. E. Portland, Oregon

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American Honey Plants, by Frank C. Pellett. 300 large pages, 155 illustrations. Cloth $2.50.

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**AMERICAN BEE JOURNAL**
**HAMILTON, ILL.**

# QUEENS

**Select Three-Banded Italians of the highest quality (one grade)**
Eight hundred honey-gathering colonies from which to select the very best breeders. No one has better bees than I. Can make prompt delivery by return mail. I have not yet disappointed a customer.

| PRICES | To July 1 | | After July 1 | |
|---|---|---|---|---|
| | 1 | 12 or more | 1 to 49 | 50 or more |
| Untested, each | $ 1.50 | $1.25 | $1.25 | $1.00 |
| Tested, each | 2.00 | | | |
| Breeders, each | 25.00 | | | |

A new customer from Missouri, where you have to show them, writes: "The dozen queens arrived promptly. They are the most beautiful I ever saw." (Name on request.) Another one, from the same state, writes: "Your 100 2-lb. packages averaged over 90 pounds surplus honey per colony; 10 pounds more per colony than the other 2-lb. packages purchased elsewhere." H. H. THALE, Durham, Mo.

Now listen to this, from Ontario, Canada: "Bees and queens purchased of you last season all wintered without a single loss. Save me 50 untested queens for May delivery." (Name on request.)

My customers say my queens stand the northern winters. They are bred up for this purpose, combined with the highest honey-gathering qualities and prolificness.

Pure mating, safe arrival, and satisfaction guaranteed. It is left with customer to say what is satisfaction.

**JASPER KNIGHT, Hayneville, Alabama**

**BEEKEEPERS** WE MANUFACTURE DOVETAILED HIVES, HOFFMAN FRAMES, SECTIONS AND SHIPPING CASES

Our hives are made of best grade White Pine, cut accurate and smooth to standard measure. Sections are made of Basswood polished on both sides. There are no better made.

We carry a complete line of everything used in the apiary. Our shipping facilities are as good as can be found anywhere. We want your business. We guarantee prompt and satisfactory service. Price list free.

**MARSHFIELD MANUFACTURING COMPANY, Marshfield, Wis.**

# TIN CANS and GLASS JARS

**We have secured a fresh supply of tin cans and glass jars as follows:**

60 lb. cans in bulk and 1 and 2 in a case
10 lb, cans in cases of 6, 50 and 100
5 lb. cans in cases of 12, 50 and 100
2½ lb. cans in cases of 24, 100 and 200
6 oz. jelly glasses in reshipping cases of 24
16 oz. Mason jars in cases of 24

Our prices are made as low as is possible. Now is the time to pack your honey and get it ready for your nearby market

*Write for complete price list*

**DADANT & SONS, Hamilton, Ill.**

# MR. BEEKEEPER—

We have a large plant especially equipped to manufacture the supplies that you use. We guarantee all materials and workmanship. We ship anywhere. We allow early order discounts and make prompt shipments. *Write for free illustrated catalog today*

**LEAHY MFG. CO., 90 Sixth Street, Higginsville, Missouri**

**J. W. ROUSE, Mexico, Missouri** **A. M. HUNT, Goldthwaite, Texas**

# TENNESSEE-BRED QUEENS

**Forty-nine Years' Experience in Queen-Rearing**
**Breed Three-Band Italians Only**

| | Nov. 1st to June 1st | | | June 1st to Nov. 1st | | |
|---|---|---|---|---|---|---|
| | 1 | 6 | 12 | 1 | 6 | 12 |
| Untested Queens | $2.00 | $ 9.00 | $16.80 | $1.50 | $ 8.00 | $14.50 |
| Select Untested | 2.25 | 10.50 | 18.00 | 2.00 | 9.50 | 16.00 |
| Tested | 3.50 | 20.00 | 35.00 | 3.00 | 16.00 | 30.00 |
| Select Tested | 4 00 | 22.50 | 40.00 | 3.50 | 18.50 | 35.00 |

Select tested, for breeding $7.50

The very best queen tested for breeding $15

Capacity of yard 6000. I sell no bees by the pound or nuclei except with high priced tested and breeding queens

Queens for export will be carefully packed in long distance cages, but safe delivery is not guaranteed

## JOHN M. DAVIS, Spring Hill, Tenn.

Five colonies of your stock produced 2660 finished sections—the best one 616 finished sections
JOHN M. BIXLER, Corning, Iowa, February 1, 1921

## FOREHANDS' QUEENS. They Satisfy, Why?

Because of 28 years of experimental work with both queen breeding and honey production.

With breeding and selecting of imported queens, I have reached a standard which is ideal. Queens as good, but none BETTER. Why experiment? Take advantage of the life experience of my breeders.

OUR SERVICE STATION

We are ready to serve you at all times, whether you desire queens or advice. Let us help you with your bee problems. All questions are cheerfully answered.

I breed three-band Italians only.

| June 1 to November 1. | 1 | 6 | 12 |
|---|---|---|---|
| Untested | $1.50 | $ 7.50 | $13.50 |
| Select Untested | 1.75 | 9.00 | 16.50 |
| Tested | 2.50 | 13.00 | 24.00 |
| Select Tested | 3.00 | 16.50 | 30.00 |

Orders booked now for spring delivery. One-fourth the full amount with order and balance when shipment is desired. Pure mating, safe arrival and satisfaction guaranteed. Write for circular and large order discounts. Shipment to foreign countries at receiver's risk.

Bees in 2-pound packages, 1, $6; 25 or over, $5.80; 50 or over, $5.40; 100 or over, $5. Without queens.

Will begin shipping bees as early as weather will permit.

**N. FOREHAND, Ramer, Alabama**

**Established 1885**

Beekeepers should send for our new catalog, free. Beehives made of white pine. Root Co.'s old standby make of supplies. Order early. Beeswax in exchange for supplies or cash.

**J. Nebel & Son Supply Co.,**
High Hill, Mo.

## ITALIAN QUEENS

**$1 EACH**

Write for Quantity Prices

**O. E. TIMM, Bennington, Neb.**

## BARNES' FOOTPOWER MACHINERY

Read what J. E. Parent, of Chariton, N. Y. says: "We cut with one of your Combined Machines last winter 50 chaff hives with 7-in. cap, 100 honey-racks, 500 frames and a great deal of other work."

**W. F. & JOHN BARNES**
**995 Ruby St., ROCKFORD, ILLINOIS**

**SHE-SUITS-ME queen-bees, prices for 1921: Untested Italians, $2 each; $1.75 each for 10 or more, prior to June 15. After June 15, 1 to 9 queens $1.50 each, 10 to 24 $1.40 each, 25 and up $1.25 each.**

**ALLEN LATHAM,**
**Norwichtown, Conn.**

## BEE SUPPLIES

We carry a complete stock of supplies at all times, and can make prompt shipments. Our prices will interest you.

**Send Us Your Inquiries**
**A. H. RUSCH & SON CO.**
**Reedsville, Wis.**

## QUEENS

Quirin's Northern bred, hardy Italians, now ready to mail. Safe delivery and satisfaction guaranteed.

PRICE OF BEES AND QUEENS

| | 1 | 6 | 12 |
|---|---|---|---|
| Untested | $ 1.50 | $ 8.00 | $15.00 |
| Tested | 2.00 | 10.00 | 18.00 |
| 2 Comb nuclei | 6.00 | 32.00 | 60.00 |
| 3 Comb nuclei | 8.00 | 45.00 | 85.00 |
| 8 frame colony | 12.00 | 70.00 | |
| 10 frame colony | 15.00 | 85.00 | |

Breeders fair, $5, the very best $10 each.

Add the price of queen wanted with nuclei or colony. This is our 30th consecutive season at queen rearing. Address all orders to

**H. G. QUIRIN, Bellevue, Ohio.**

CHESHIRE'S "BEES AND BEEKEEPING," in two volumes, has recently been reprinted. We offer it to our subscribers at $5 for the two volumes, postpaid.
AMERICAN BEE JOURNAL, Hamilton, Ill.

## *"Order Supplies in Advance of Needs"---says a well-known bee man*

"Supplies should always be on hand in advance of needs. A dozen reasons may cause delay, and valuable time and money may be lost. This must be borne in mind if we would reap the largest possible harvest of honey. I have seen a colony fill a super with honey in five days. If we had waited a week or ten days for sections or foundation, we would have lost heavily during the honey flow."

Order **"falcon"**. Queens and bee supplies for best results. Used by successful beemen for over 40 years. Shipped anywhere; safe arrival guaranteed.

**W. T. FALCONER MFG. CONCERN, Falconer, (near Jamestown) N. Y., U. S. A.**

*"Where the best Beehives come from"*

**Distributor for the Central West, WM. H. RODMAN, 2027 Main Street, Gateway Station, KANSAS CITY, MO.**

# HONEY

**All sweets have experienced sensational declines**

**The world's supply of sugar is estimated at 1,250,000 tons in excess of requirements.
If you have honey, sell it early. If you cannot sell it, WE CAN.
Write us and send samples.**
MONEY for HONEY

## PATON & COWELL

**No. 217 Broadway, New York, N. Y.**

## HIVES AND QUEENS AT PRE-WAR PRICES

Hives, with frames and one-piece wood covers, made of best grade of cypress and accurately manufactured.

Prices: 10-frame size, $14 per lot of 5. 8-frame size, $13.50 per lot of 5. Full depth supers (with self-spacing frames), $1.50 each.

Queens: Untested, $1 each, $10 per dozen, $80 per 100. Tested, $2 each. Breeders, $5 each.

These Italian queens are bred from best stock obtainable.

Medium brood foundation, 68c per pound.

**A. R. IRISH, Doctortown, Ga.**

QUINN'S QUEENS OF QUALITY

Have no superiors—"There's a reason." Are Mandelian bred, good qualities accentuated. Gray Carniolans, Gray Caucasians, most gentle of all, prolific, hardy, vigorous, disease-resisiting white comb builders—they deliver the goods.

ITALIANS, 3-banded, line-bred, pedigreed; need no boosting; they speak for themselves.

CHAS. W. QUINN. Sabot, Va.

MOTT'S NORTHERN BRED ITALIAN QUEENS

Have a World-wide reputation.
Sel. Unt., 1, $1.25; 6, $7.50; 12, $15.
Sel. guaranteed pure mated or replace, 1, $1.75; 6, $10; 12, $18.
Sel. tested, $2.50 each.

Filling orders by return mail at this present writing by the aid of my Southern branch. Plans, "How to Introduce Queens" and "Increase," 25c.

E. E. MOTT, Glenwood, Mich.

# QUEENS

Good queens and strong colonies pay the profit.

**Gentle Three-band Italians**

Untested, $1.25; 12 or more write for price.

**Prompt Service**

**D. W. HOWELL, Shellman, Ga.**

QUEENS OF

MOORE'S STRAIN

OF ITALIANS

Produce Workers

That fill the supers quick
With honey nice and thick

They have won a world-wide reputation for honey-gathering, hardiness, gentleness, etc.
Untested queens, $1.50; 6, $8; 12, $15
Select untested, $2; 6, $10; 12, $19
Safe arrival and satisfaction guaranteed.
Circular free.

I am now filling orders by return mail.

J. P. MOORE, Queen Breeder
Route 1 Morgan, Ky.

# Quality Bee Supplies

FROM A

# Reliable House

Without fear or favor, I place my BEE SUPPLIES and SERVICE before you.

It is the small annoyances that often grow into disastrous results. Avoid the so-called "little losses" by using MONDENG'S GOODS.

Quality is first—save time when you put your goods together, by getting supplies that are accurately made. Service is next—no delays when bee supplies are ordered from my factory.

I am ready to meet your urgent needs.

Send for my new price list.

Closing out all Langstroth and Wisconsin hives and supers. Also Langstroth triangular top-bar frames and eight-frame D. T. supers for 4x5 sections. Will sell at cost price. Write for quotations.

**CHAS. MONDENG**

146 Newton Ave. N. and 159 Cedar Lake Rd. Minneapolis, Minn.

## QUEENS, Select Three-Banded

Write for descriptive circular of our Select Italian Queens. Pure Mating, safe arrival and satisfaction guaranteed.

| | 1 | 6 | 12 | 50 |
|---|---|---|---|---|
| Untested | $1.25 | $ 7.00 | $13.00 | $50.00 |
| Tested | 3.00 | 16.00 | 30.00 | |

"The queens you furnished me last year were all tip-top, and one of them caps the climax. I never saw anything like her."—D. E. Scott, Caney Springs, Tenn.

**HARDIN S. FOSTER, Columbia, Tenn.**

## QUEENS, THREE-BAND ITALIANS

BRED FOR BUSINESS

Only one grade—select. Satisfaction guaranteed

| | 1 | 12 | 25 to 50 | 100 |
|---|---|---|---|---|
| Untested | $1.25 | $13.00 | $1.00 ea. | $90.00 |
| Tested | 1 75 | 18.00 | | |

A two-pound package of bees and untested queen $5.50 25 or more packages $5.25 each

**CANEY VALLEY APIARIES, J. D. Yancey, Mgr.**

**BAY CITY, TEXAS**

## GOLDEN ITALIAN QUEENS

| | Nov. 1 to June 1 | | | June 1 to Nov. 1 | | |
|---|---|---|---|---|---|---|
| | 1 | 6 | 12 | 1 | 6 | 12 |
| Untested | $2.00 | $ 9.00 | $16.80 | $1 50 | $ 8.00 | $14.50 |
| Select Untested | 2.25 | 10.50 | 18.00 | 2.00 | 9.50 | 16.00 |
| Tested | 4.00 | 22.50 | 40.00 | 3.50 | 10.50 | 36.00 |
| Select Tested | 4.50 | 25.00 | 45.00 | 4.00 | 22.50 | 40.00 |

**BREEDERS $12.50 TO $25.00**

10 per cent additional for Exported Queens. Queens for Export will be carefully packed in long distance cages, but safe delivery is not guaranteed.

NO NUCLEI, FULL COLONIES OR POUND PACKAGES.

**BEN G. DAVIS, Spring Hill, Tenn.**

## QUEENS

Write for our catalog of high grade Italian Queens. Pure mating and safe arrival guaranteed.

| | |
|---|---|
| 1 to 4 inclusive, | $3 each |
| 5 to 9 inclusive, | $2.90 each |
| 10 or more | $2.80 each |
| Breeders, | $12.00 each |

**JAY SMITH, Route 3**

**VINCENNES, IND.**

## LOWER PRICES

Order from these quotations
Write for complete price list

| | |
|---|---|
| Untested Italian queens, each | $ 1.25 |
| Untest'd Italian queens, per 100 | 98.75 |
| 2 lbs. bees, with queens | 5.75 |
| Sections, No. 1 grade | 12.85 |
| Sections, No. 2 grade | 12.25 |
| Hoffman brood frames, per M | 65.00 |
| 5-lb. friction top pails (200) | 20.50 |
| Cases of 5-gallon cans | 1.35 |
| 5-gallon cans in bulk | 41.75 |
| Double tier cases for comb honey per 100 | 50.00 |

"Airco" Comb Foundation

| | 1 lb. | 25 lbs. | 100 lbs. |
|---|---|---|---|
| Medium brood | 85c | 80c | 75c |
| Light brood | 87c | 82c | 77c |
| Thin surplus | 90c | 85c | 80c |
| Ex. thin surplus | 92c | 87c | 82c |

"Airco your Bees"

**The Foster Honey & Mercantile Co.**

**BOULDER, COLORADO**

"Foster Your Business"

## Thagard Italian Queens

BRED FOR QUALITY

My three-banded queens, which are bred from imported queens, produce workers that fill the supers quickly. Place them against any you may obtain elsewhere, and note the results.

Untested,, $1.25 each; 12, $11.50.

**V. R. THAGARD**

Greenville, Ala.

# Crop and Market Report

**Compiled by M. G. Dadant**

Peculiar conditions have confronted beekeepers in many sections of the country this spring, conditions which are hard to meet, even by the experienced beekeeper who has seen many ups and downs.

A mild winter brought the bees out in fine condition, but so short of honey that feeding became necessary, in many instances, from the first examination in the spring.

Then when the bees were building up, even abnormally early, in good shape, a heavy freeze came which destroyed all early bloom. Early bloom of fruits, dandelion, locust, etc., is depended upon in many sections of the middle west as the proper stimulation for getting the bees into best condition for clover to follow.

This period of honey dearth has been followed by spotted rains; that is, some sections are wet while others have been dry. In the last two weeks, rains have become more general, but too late to insure much surplus from clover in the central west, though possibly hopeful builders for fall bloom.

The honey harvest of the middle west, therefore, will not be large for the clover crop, and this applies as well to the East, although there are spotted regions where the bees are storing a surplus.

In the Southeast the crop has been neither large nor small. Early Texas bloom was short, but conditions are improving and have been improving for the past month.

The inter-mountain territory will likely have a good crop, though the web-worm moth is again working on the alfalfa.

Southern California reports the poorest crop, and prospects for years, while northern California seems to be faring better.

### HONEY ON HAND

There is still a large supply of the 1920 crop on hand and it is moving very slowly. In Arizona and New Mexico a bulk of the crop had not moved on June 1, though much of it was being offered at 6 cents per pound for amber alfalfa. Heavy freight rates, competition of the imported honey, lack of exportation, low price of sugar, and general tendency of the public not to buy anything more than necessary, are all contributing causes.

Certainly the bulk of the new crop will be available long before the old stocks are disposed of.

The general feeling, however, seems to be optomistic, with the hope that there will be an upward tendency and stabilization at a better figure sometime in the fall or early winter.

### GOVERNMENT HONEYBEE REPORT MAY 1

The Government honeybee report for May shows that the winter loss for 1920-21 was but 8.5 per cent, as against 14 per cent in 1919-20.

The condition of colonies was 97 per cent of normal, as against only 84 per cent in 1919, same date, and the condition of honey plants was almost exactly the same as on the same date last year. This honey plant condition has, however, greatly changed since the report was issued, and in our opinion, should now be placed much lower. Freezing of early bloom and lack of moisture in many localities being the contributing causes.

### ONTARIO REPORT MAY 1

Twenty thousand colonies were reported upon for the white honey crop in Ontario. It shows an average winter loss of 2.3 per cent, with very little honey left in the hands of the producers. Prospects seem to be above the average in most sections of the Province.

### IMPORTS AND EXPORTS

We can show woefully small exports of honey in the months of March and April, which have just been made public. The imports for March were 200,000 pounds, and the exports only 100,000 pounds. In April the exports and imports balanced each other at 100,000 pounds. This gives an idea of why honey is not moving better, for in 1919 we exported over nine million pounds, and even in 1920 nearly two million pounds.

Besides a minimum export, much more honey is coming in. Markets are having to be created for this honey within our own boundaries.

### CALIFORNIA STATISTICS

Mr. E. H. Tucker, of the First National Bank of Los Angeles and the Los Angeles Trust and Savings Bank, acting as their statistician, estimates that California produces 15 per cent of the honey of the United States. Between 70 and 90 per cent of this is marketed outside the State. Of all honey sold outside the State of production, from one-third to one-half comes from California.

His figures, based upon those of the Chief of the Field Service of the U. S. Department of Agriculture, are for a production in the United States in 1920 of 250 million pounds of honey and 210 million pounds in 1919. Strange that 1920 census figures are already available for 38 States and that they show a total production of only 40 million pounds. Do the city apiaries unreported make up this huge discrepancy?

### PRICE PROSPECTS, ETC.

Contrary to the expectations of some of our best statisticians, sugar continues to decline, being quoted in New York on June 15 at 6 cents per pound for granulated, with further declines probable, owing to the weakness of the raw stocks.

Moreover, exchange has again dipped down, the high mark of $4.00 for pound sterling having been reached in May. Naturally there will be a reticence on the part of other countries to buy, as long as the rate is so unfavorable against them.

The desire on the part of some producers to bend their energies this year for increase, owing to low prices, was partly thwarted by their not wanting to purchase hives, etc., at the high prices. Whether the price declines came in time to allow them to reconsider is problematical.

All in all, the outlook would not, on the face of it, appear rosy. Honey, like other farm products, went through its deflation all at once. The general belief is that all farm products will gradually seek a stable and more remunerative level with fall and winter. Should not honey be expected to undergo the same changes? We hope so.

In the meantime, energetic efforts cannot be in vain. No chance should be lost to sell honey, locally. To push its value as a food, as a sweet, and every agency or organization which has for its aim the popularization and the sale of honey should be gotten behind and pushed. We have passed through a period when honey sold itself, when the producer and seller set the price. We are now watching the buyer set the price or refuse to buy. All the more reason for us to push our product and help create the demand.

# GOOD WILL AND GOOD QUEENS

ARE BACK OF

## FOREHAND'S THREE BANDS

*The Thrifty Kind*

Good will has made our success.

Our good queens will make your success.

These two forces working together have made it possible for us to serve the beekeepers for over a quarter of a century.

Hearty support for twenty-nine years.

Good queens for twenty-nine years.

Each is the proof of the other. Both are proof that you will not make a mistake when you requeen with Forehand's Three-bands—the bees that are **surpassed by none, but superior to many.**

Good queens are the success of an apiary. Your success is ours. We try to help you in every way. We give you good queens and good service. We guarantee pure mating, safe arrival, and satisfaction.

We are now booking orders for immediate delivery.

Write for circular giving full information on bees and queens.

**Prices:**

| | 1 | 6 | 12 | 100 |
|---|---|---|---|---|
| Untested | $1.25 | $ 6.50 | $11.50 | $ .90 each |
| Select Untested | 1.40 | 7.50 | 13.50 | 1.00 each |
| Tested | 2.00 | 10.00 | 18.50 | |
| Select Tested | 2.75 | 15.00 | 27.00 | |

Pure mating and satisfaction guaranteed the world over. Safe arrival in the United States and Canada.

Write for prices in large quantities.

**W. J. FOREHAND & SONS, Fort Deposit, Ala.**

# ITALIAN BEES AND QUEENS

**Guaranteed to Give You Satisfaction**

Untested, $1.00; 12 or more 75c each
Tested, $2.00
Breeders, $5.00 to $25.00

| Nuclei | |
|---|---|
| One frame, no queen | $2.00 |
| Two frame, no queen | $3.75 |
| Three frame, no queen | $5.25 |

| Pound Packages | |
|---|---|
| One pound package, no queen | $2.00 |
| Two pound package, no queen | $3.75 |
| Three pound package, no queen | $5.25 |

Add price of queen wanted.

Our production of untested queens from one yard in May was 3,496 queens. If we used poor methods we would be unable to produce that many. Quality and production go hand in hand. They are both the fruits of efficiency.

**Send for Catalog of Cypress Bee Supplies.**

**THE STOVER APIARIES, MAYHEW, MISSISSIPPI**

# INCREASE YOUR INCOME

**By Selling Your Honey at Retail**

L. A. Coblentz of Idaho could get no offer above eight cents per pound for his last years crop from the bottlers. With his wife's help he sold more than 100,000 pounds direct to the consumer at current retail prices, viz: 15c per pound in sixty pound cans; 20c in ten pound pails and 22c in five pound pails.

You can do as well with the same effort. Don't ruin your future market by cutting below a living price, but put up your crop in attractive containers and sell it direct to the consumer.

We will furnish you the labels and other necessary printed matter.

*Send today for our label catalog and samples of printing*

**AMERICAN BEE JOURNAL, HAMILTON, ILLINOIS**

**THE SOUTHLAND APIARIES**

W. S. TATUM, Prop.

BY INDUSTRY WE THRIVE

Box 585. HATTIESBURG, MISS.

# SOUTHLAND QUEENS AND BEES

**BRED FROM SELECTED ROOT HOME-BRED BREEDERS. THEY STAND THE TEST**

**QUEENS after July 1st**

| | | | |
|---|---|---|---|
| Day old Virgins | $1.00 ea. | 100 or more | $.75 ea. |
| 100 or more | .50 ea. | Tested | 2.25 ea. |
| Untested | 1.25 ea. | 25 or more | 2.00 ea. |
| 25 or more | 1.00 ea. | | |

**PACKAGES**

| | | | |
|---|---|---|---|
| 1 pound package bees | 3.00 ea. | 3 pound package bees | 7.00 ea. |
| 2 pound package bees | 5.00 ea. | 25 or more, 25c less per pound, each package | |

| NUCLEI | | SPECIALS | |
|---|---|---|---|
| 2 frame nucleus, no queen | $4.50 | 1 fr. brood and pound of bees, with untd. queen | $4.50 |
| 3 frame nucleus, no queen | 6.00 | 2 fr. nucleus with young tested queen | 6.50 |

**SPECIAL PRICES ON LARGE ORDERS AND CONTRACTS**

**MONEY SAVED** **BEE SUPPLIES** **TIME SAVED**

**ROOT'S GOODS WITH WEBER'S SERVICE**

Send us a list of your wants and we will quote prices that will save you money

**C. H. W. WEBER & CO., 2163-65-67 Central Ave., Cincinnati, O.**

**QUEENS** **PACKAGE BEES** **QUEENS**

**FULL COLONIES AND NUCLEI**

Our bees are hustlers for honey, prolific, gentle, very resistant to European foulbrood, our customers tell us. For years we have been shipping thousands of queens and pounds of bees all over the United States and Canada. We are continually getting letters with statements such as the following: "Well pleased with your stock; best we ever had. The bees we got from you are the tops (best) out of our 225 colonies; bees arrived in fine shape, well pleased," etc. Write for free circular giving details, etc.

We are quoting a lower price for balance of the year, but will still hold up the high standard of Quality First. I have a good proposition for two or three Northern men wanting to come South this fall. Write for particulars.

Queens after July 1st, balance of the y

| | |
|---|---|
| Untested | $1.35 each, 25 or more $1.00 each |
| Select Untested | $1.50 each, 25 or more $1.25 each |
| Tested | $2.25 each, 25 or more $1.75 each |
| Select Tested | $2.75 each, 25 or more $2.00 each |
| Breeders | $5.00 to $15.00 |

| | |
|---|---|
| 1 pound pkg. bees, | $2.25 each; 25 or more, $2.13 each |
| 2 pound package bees | $3.75 each; 25 or more, $3.56 each |
| 3 pound pkg. bees, | $5.25 each; 25 or more, $4.98 each |

Add price of queen wanted when ordering bees. Safe arrival guaranteed within 6 days of here.

**NUECES COUNTY APIARIES, E. B. AULT, Proprietor CALALLEN, TEXAS**

**"SUPERIOR" FOUNDATION. Yes, we are ready for the rush**

Many tons now ready for shipment, and our machines are running to utmost capacity. Use the best. If your dealer can't supply you, write us for price, stating quantity required. We also accept beeswax for foundation or supplies.

**"Everything in Bee Supplies."**

**SUPERIOR HONEY CO., Ogden, Utah (Manufacturers of Weed Process Foundation)**

*Southern Headquarters*

**Reliable Three-Banded Italian Queens**

For several years our queens have been used and recommended by a number of the foremost beekeepers in the United States and Canada. We cannot afford to disappoint them, and we *will not* disappoint you.

Having several hundred colonies in outyards to select breeding stock from, and large, well-equipped queen-rearing yards, we are sure we offer you something good. We pay special attention to honey-gathering qualities, but do not forget gentleness, beauty, etc. Our queens are good to look at, and their bees a pleasure to work with.

*Prices*: Untested, $1.25 each; six, $7.50; twelve, $13.50; fifty or more, $1 each. Tested, $2 each.

Prompt service, safe arrival of queens, and satisfaction, we guarantee. Any queens that prove to be mismated will be replaced free of charge. No foulbrood or other contagious disease has ever been in our vicinity.

**W. D. ACHORD, Fitzpatrick, Alabama**

**WESTERN BEEKEEPERS!**

We handle the finest line of bee supplies. Send for our 68-page catalog. Our prices will interest you.

**The Colorado Honey Producers' Association, 1424 Market St.,**
**Denver, Colo.**

**GOLDEN QUEENS 1921**

Golden and three-band queens, untested $1 each, or 6 for $5; $80 per 100. Virgin queens 50c each, or $40 per 100. All orders will be filled promptly, or parties notified just when to look for them. Reasonable satisfaction to everybody.

**R. O. COX, Rt. No. 4, Luverne, Ala.**

**3-Banded — Highest Quality of Italian Queens — Golden**

Twenty-five years of select breeding from the best.

We are prepared to ship queens by return mail, or on very short notice. Every queen sent out by us is guaranteed to arrive in perfect condition and to give absolute satisfaction. Our strains have proved themselves to be not only great honey gatherers but also very resistant to disease, especially European foulbrood.

Listen to what others say about them:

"One of your queens built up from a nucleus and made 360 pounds of surplus honey. Enclosed find $75 for fifty queens. I want these for requeening European foulbrood colonies, as I find your stock resistant." Troy, Pa. (Name on request.)

"The queens I got from you have all the others skinned. They are gentle, best of workers and stand the long winters here. Other queens coming from a shorter distance do not hold a candle to them." Gilbert Plains, Man., Canada. (Name on request.)

PRICE LIST OF OUR QUEENS

Untested.................. $1.10 each; 6 to 25, $1.05 each; 25 to 50, $1 each; 50 up, 90c each
Select untested.... $1.25 each; 6 to 25, $1.15 each; 25 to 50, $1.10 each; 50 up, $1 each
Tested ............... $2.25 each; 6 to 25, $2.15 each; 25 to 50, $2.10 each; 50 up $2 each
Select tested .... $3.00 each; 6 to 25, $2.75 each; 25 to 50, $2.50 each; 50 up, $2.25 each
Breeders, $25 up to $35 each. Wings clipped free of charge on request.

**M. C. BERRY & CO., Hayneville, Ala., U. S. A.**

**TIME IS MONEY**

When the honey flow is on and you need supplies which will enable your bees to gather a maximum crop of honey. If you are rushed and in a particular hurry, try ordering from Council Bluffs. For we are well stocked with the supplies you need. Can ship over any one of nine trunk lines to your very back door, and are prepared to give your order immediate and individual attention.

If you want action, try us. That is, if you use quality goods. That's the only kind we can send you. June, July and August are your hardest months. Let us help you in making these months count.

**THE A. I. ROOT CO. OF IOWA, COUNCIL BLUFFS, IA.**

The "Railroads Everywhere" Town

**FOR SALE**

Having filled all my orders for nuclei, I am now prepared to fill all orders for queens by return mail.

Untested, single, $1.25, six for $7.00, 12 for $13.00. Lots of 50 or more, $1.00 each.

Tested queens, $1.75 each.

Select tested, for breeding, $2.50 each.

I have 50 or more of mismated queens at 50c each. Also some blacks at 30c.

**A. B. MARCHANT, Jesup, Georgia**

References: Merchants and Farmers Bank, Jesup, Ga.

**SECTIONS! SECTIONS!! SECTIONS!!!**

While our present stock lasts we give you the opportunity to buy No. 2 sections at a big reduction. We offer as follows:

| | |
|---|---|
| No. 2—4¼x4¼x1⅞ two beeway Sections, per thousand | $8.00 |
| No. 2—4¼x4¼x1½ plain Sections, per thousand | 7.00 |
| No. 2—4x5x1⅜ plain Sections, per thousand | 7.00 |

We are pleased to announce a big reduction in Bee Supplies. Send us a list of the goods you wish to purchase and we will quote you our new reduced prices.

**AUGUST LOTZ COMPANY, Boyd, Wisconsin**

QUALITY
TIN CANS
FIRST
For PACKERS and MANUFACTURERS of FOOD PRODUCTS
LARGE CAPACITY
LONG EXPERIENCE
YOUR INQUIRIES SOLICITED
W. W. BOYER & CO. INC.
BALTIMORE, MD.

**LILLY'S**
Established 1883

Seattle
Yakima
Ellensburg
Wapato
Portland

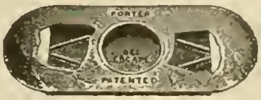
HEADQUARTERS FOR

**LEWIS BEEWARE**
**DADANT FOUNDATION**
**WESTERN PINE HIVES**

*Write Us. It Pays*

**LILLY'S**
Established 1883
The Chas. H. Lilly Co.
Seattle, Yakima, Portland

**PORTER BEE ESCAPE SAVES HONEY TIME MONEY**



For sale by all dealers
If no dealer, write factory
R. & E. C. PORTER, MFRS.
Lewistown, Illinois, U. S. A.
(Please mention Am. Bee Journal when writing)

A NEW BEE BOOK
"Dadant's System of Beekeeping"
Send for a copy today.
Price $1.00.

# HONEY HONEY HONEY

¶ There are many beekeepers who do not produce enough Honey to supply their trade.

¶ Many of them are buying their extra needs from us. The particular advantage we can offer is a uniform Honey at all times at a reasonably low price.

¶ Our special blend of Fancy Honey is of a fine mild flavor and is always uniform. This Honey is liquid in various size tins. For those who prefer it we can supply any grade of the best flavored Table Honeys, granulated in 60 pound tins.

### SPECIAL BLEND OF FANCY HONEY (Liquid)

| | |
|---|---|
| 60-lb. tins, 2 per case | 14c lb. |
| 10-lb. tins, 6 per case | 16c lb. |
| WATER WHITE SWEET CLOVER HONEY— | |
| 60-lb. tins, granulated | 13c lb. |
| 5-lb. tins, 12 per case | 17c lb. |
| 2½-lb. tins, 24 per case | 18c lb. |
| CALIF. EXTRA L. A. SAGE HONEY— | |
| 60-lb. tins, granulated | 12c lb. |

### GLASS AND TIN HONEY CONTAINERS

2½-lb. cans, 2 dozen reshipping cases, $1.45 case; crates of 100, $6.50

5-lb. pails (with handles), 1 dozen reshipping cases, $1.35 case; crates of 100, $8.30

10-lb. pails (with handles), ½ dozen reshipping cases, $1.10 case; crates of 100, $12.75

60-lb. tins, 2 per case—new, $1.30 case; used, 50c.

### WHITE FLINT GLASS, WITH GOLD LACQD. WAX LINED CAPS

8-oz. honey capacity, cylinder style... $1.50 per carton of 3 doz.

16-oz. honey capacity, table jar service. $1.40 per carton of 2 doz.

Quart, 3-lb. honey capacity, Mason style, $1 per carton of 1 doz.

**HOFFMAN & HAUCK, Inc. Woodhaven, N. Y.**

# LOW PRICES AGAIN

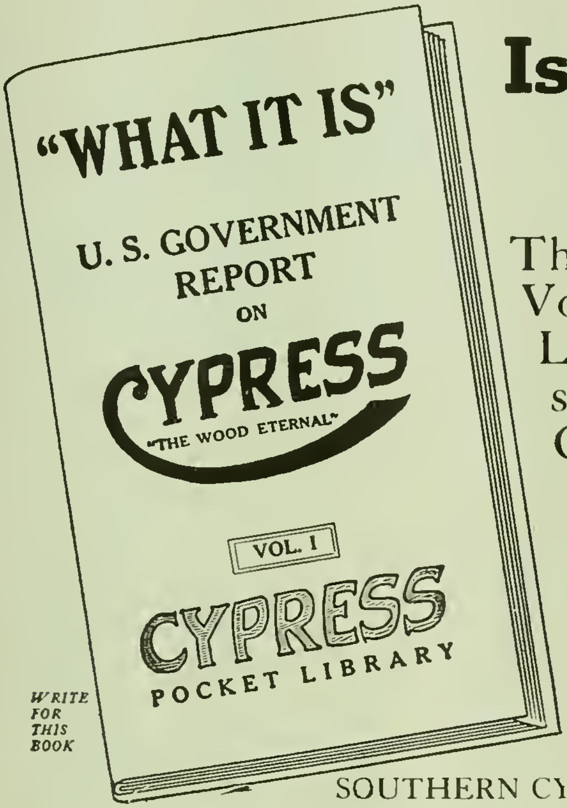
## ON QUALITY GOODS DISCOUNTS AS FOLLOWS:

Frames less 40%, Hives and the General Line less 35%, Sections and Shipping Cases less 35%, and immediate shipment, too

*Get our Prices Before Ordering*

**THE A. I. ROOT CO. OF IOWA**

**COUNCIL BLUFFS, IOWA**



WRITE FOR THIS BOOK

Is Uncle Sam's Word Good Enough?

Then Mr. Bee-man, just write for Volume I of the Cypress Pocket Library and read what our respected Uncle has to say about Cypress ("The Wood Eternal.") You'll then see why any beehive, or bottom or winter case not made of Cypress is not so good as it might be. 42 other volumes all free. The list is in Volume I. Write and it comes.

SOUTHERN CYPRESS MANUFACTURERS' ASSOCIATION
1251 Perdido Building, New Orleans, La., or 1251 Heard National Bank Building, Jacksonville, Fla.

Insist on TRADE-MARKED Cypress at Your Local Lumber Dealer's — If he hasn't it, *LET US KNOW IMMEDIATELY*

ALUMINUM HONEYCOMBS

will eventually be used by every progressive beekeeper.
Don't be one of the last to profit by their
remarkable merits

COMBS MANUFACTURED BY

**The Duffy-Diehl Company of Pasadena, Calif.**

DISTRIBUTED ONLY BY

**THE DIAMOND MATCH COMPANY**
APIARY DEPARTMENT

CHICO, CALIFORNIA

# REDUCED PRICES

## IN ROOT QUALITY SUPPLIES

Based on present and prospective raw material cost and wage reductions, The A. I. Root Company has reduced bee supply prices to help get the nation's business "back to normal," as promised on page two ot our 1921 spring catalog. Write at once, if you do not get your copy of our price list on

# ROOT'S DISCOUNT SALE

## Important Summer Price Reductions

As these discounts from our summer catalog prices are subject to withdrawal without notice, and as they will result in large orders, we suggest that you order immediately

*Discounts are as follows:*

**40 Per Cent**

**Frames, Cartons** (for comb honey) **Untested Queens, Bees.**

**35 Per Cent**

**Sections, Shipping Cases.**

**25 Per Cent**

**Hives** (flat), **Inside Furniture, Honey Boards, Cages, Beginners' Outfits.**

**10 Per Cent**

**Honey and Wax Extractors, Smokers, Knives, Traps, Metal Goods.**

AIRCO COMB FOUNDATION IS REDUCED 10c PER POUND

No discount on Buckeye hives, books, glass, tin or sundry unnamed items These discounts have no relation whatever to any special price quoted in our close-out list or elsewhere. They apply only to our REGULAR 114th EDITION, SPRING 1921

### MAKE HAY WHILE THE SUN SHINES

Now is the time to complete and better your equipment, extractors, honey boards, traps, smokers and veils Supplies ready at hand—foundation, sections, cartons, shipping cases, glass and tin containers, will save you time which may be used in producing more honey

### WHY BUY ROOT QUALITY BEE SUPPLIES?

You believe thoroughness to be the biggest factor in success

And to get thoroughness you want the best bee supplies money will buy. Equipment all standardized on Root quality is one big aid to thorough work. Root supplies mean accurate and fast work.

Time saved by fast work is the time that takes care of more colonies

You will find the Root quality, top quality, and Root treatment now called service, man to man treatment

# THE A. I. ROOT COMPANY

MEDINA, OHIO, U. S. A.

# AMERICAN BEE JOURNAL

AUGUST, 1921

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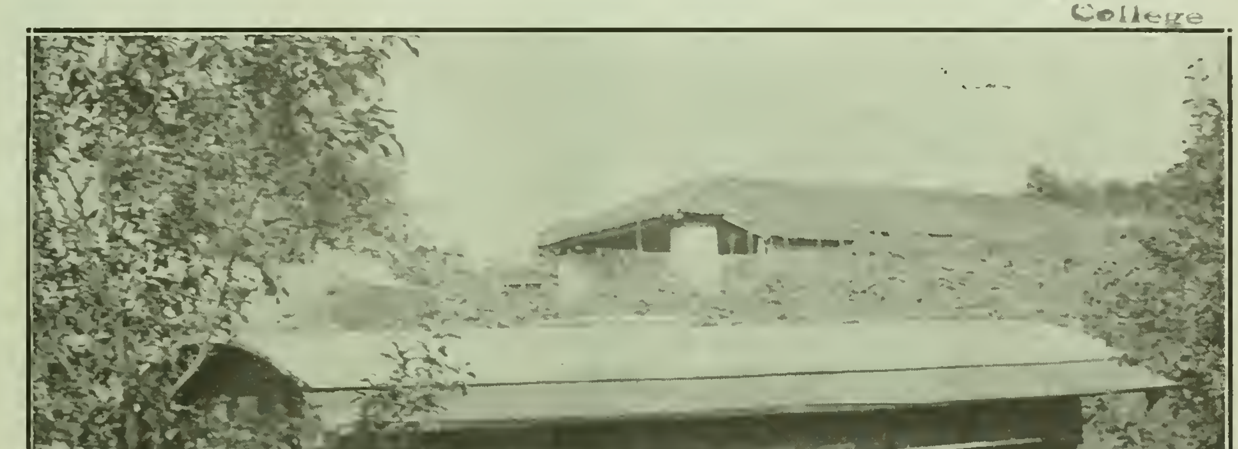
College



AN APIARY ON WHEELS IN CARNIOLA

Shake with H. N. MAJOR,
South Wales, N. Y.

Mr. Major is one of the leading Queen Breeders for his age Keep your eyes on him, he will be a second Doolittle. The other week Major wrote us like this:

> "I have worn all kinds of veils from home-spun to factory made —but for real work and comfort give me a "MUTH IDEAL

**Order one today $1.50**

### FRICTION TOP CANS

| | per 100 | per 10 |
|---|---|---|
| 2½ lb. cans | $ 4 25 | $ .50 |
| 5 lb. cans | 8.00 | 1.00 |
| 10 lb. cans | 12.00 | 1.40 |

### 60-LB. SQUARE CANS

Used cans, good and clean, packed two in each crate

| 1 to 9 crates | 10 to 99 crates | 100 cts. or more |
|---|---|---|
| 70c per crate | 65c per crate | 60c per crate |

### 1-LB. SCREW TOP HONEY JARS

Two dozen to case

| 10 case lots | 100 case lots |
|---|---|
| $1.75 per case | $1.70 per case |

### HONEY

We are in the market for Comb and Extracted Honey. Send us a sample and tell us how much you want for it delivered to Cincinnati. We remit the day shipment is received. No waiting for your money when you ship to MUTH.

### BEESWAX RENDERING

From the looks of our Wax Rendering Department some of your wives read our advertisements. As soon as they read about saving the muss around the house and her wash boiler she must have said, "John you send that old comb to MUTH. No more mussing around this place."
Send for shipping tags or mark your name and ours plainly on the barrels. We will render the old comb and pay you the market price for wax less 5c per pound for rendering.

### ITALIAN QUEEN BEES

| Quantity | Price |
|---|---|
| 1 untested | $ 1 50 |
| 6 untested | 8 50 |
| 12 untested | 15.00 |

| Quantity | Price |
|---|---|
| 1 Tested pure | $ 2.00 |
| 6 Tested pure | 10.50 |
| 12 Tested pure | 18.00 |

### SPECIAL HONEY EXTRACTORS

| | |
|---|---|
| No. 5 Novice, 2 frame (A good little extractor) | $25.00 |
| No. 15 Cowan, 2 frame (A wonder for speed) | 32.75 |

**THE FRED W. MUTH CO., Cincinnati, Ohio**
**PEARL AND WALNUT STREETS**

# DO YOU USE ALUMINUM HONEYCOMBS?
## IF NOT, WHY NOT?

**Each comb is in itself a valuable asset to any apiary. It is the only comb which enables BEEKEEPERS TO OBTAIN ALL THE HONEY without waiting for the bees to draw out foundation. THEREBY SAVING TIME AND MONEY.**

**We can prove that no practical BEEKEEPER can afford to be without the ALUMINUM HONEYCOMB**

In a recent issue of a National Bee Publication the following question and its answer appeared:

Q. What is the total cost of a fully drawn out wax comb?
A. The mininum cost of drawing out a wax comb is 50 cents.

PRACTICAL BEEKEEPERS are buying ALUMINUM HONEYCOMBS because they

Cannot be destroyed by moths or rodents
Make extracting of honey easy
Control production of drones
**Can be sterilized**
Prevent loss by melting
Increase production
Last forever with reasonable care
**Cost no more than wax combs**

**THE DIAMOND MATCH CO., Apiary Dept., CHICO, CAL.**
**Sole distributors for DUFFY-DIEHL, Inc., Pasadena, Cal.**

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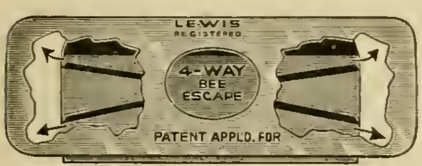
### Missouri Meeting

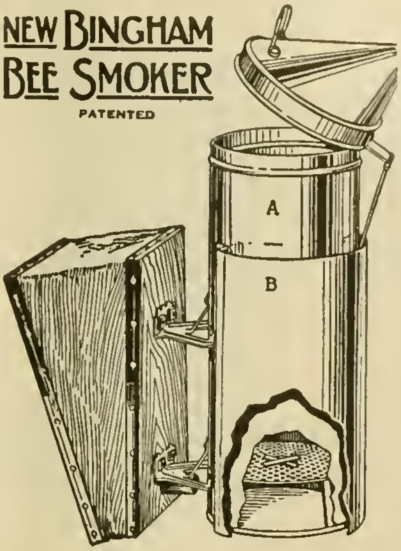
The Missouri Agricultural Society will hold a meeting August 26-27. August 26 at the home of Miss Emma L. Compton, East Kansas City, Mo. Maple Park is the station, on the Exselsior Springs interurban, from either Kansas City or Liberty. August 27 at J. F. Diemer's yard, Liberty, Mo. Messrs. E. R. Root, C. P. Dadant, Dr. L. Haseman and others, have been asked to speak, and Mr. Diemer will give a queen-rearing demonstration. All beekeepers invited.

**Lewis 4-Way Bee Escapes**



Four exits from supers. Fits all standard boards Springs of coppered steel. Made of substantial metal.

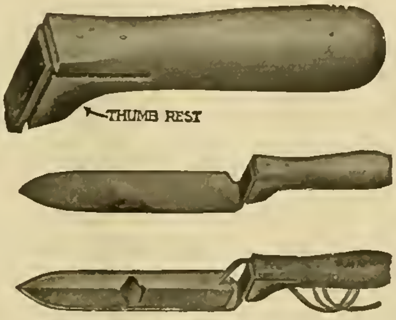
Made by
G. B. LEWIS COMPANY,
Watertown, Wis., U. S. A.
Sold only by Lewis "Beeware" Distributors.



**Buy Bingham Bee Smokers**

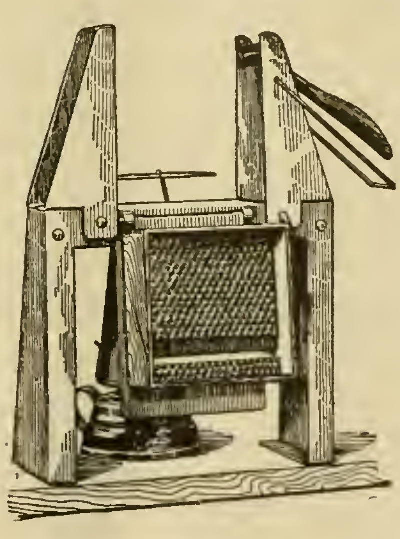
On the market over 40 years. The bellows of best quality sheep skin, is provided with a valve, which gives it pep and makes it respond quickly to the most delicate touch, giving as much or as little smoke as is required. The Big Smoke size, stove 4x10 inches, with asbestos lined shield, permits the holding of the smoker between the knees without danger of burning the trousers or one's legs. This size is much appreciated by extensive operators.

| | Size of stove. inches | Shipping weight. lbs. |
|---|---|---|
| Big Smoke, with shield | 4 x10 | 3 |
| Big Smoke, no shield | 4 x10 | 3 |
| Smoke Engine | 4 x 7 | 2¼ |
| Doctor | 3½x 7 | 2 |
| Conqueror | 3 x 7 | 1¾ |
| Little Wonder | 3 x 5½ | 1½ |



**Buy Bingham Honey Uncapping Knives**

Made of the finest quality steel for the purpose that money can buy. These knives of the proper thickness and quality have given the best of satisfaction, as the old-timers will testify. For over thirty years the men engaged in the manufacture of these knives have been at this work. The perfect grip cold handle is one of the improvements.



**Buy Woodman Section Fixer**

One of our men with the section fixer puts up 500 sections with top starters in one hour and thirty minutes; 500 sections set up with top starters in ninety minutes. This includes the labor of cutting foundation, getting sections and supers and placing the sections into the supers and carrying them away. A complete job. This is nothing unusual, but his regular speed. You can do the same if you have the push, after you become accustomed to the work. There is no breakage of sections. It will pay you to secure one of these machines for this work. It is the best thing of the kind on the market.

**Special Sale Honey Packages**

Get our latest reduced prices on all honey packages. Let us add you to our large list of pleased customers in this line of merchandise. Special prices on shipment from factories direct to customer. Sixty-pound cans in bulk and in cases. Friction top pails and cans all sizes. Clear flint glass. Mason jars pints an quarts; tumblers, pound jars and other sizes. Get on to our list, so as to get quotations.

**A. G. WOODMAN CO.**
GRAND RAPIDS, MICH., U. S. A.

**HONEY** **WANTED** **HONEY**

We are in the market for both comb and extracted. Send sample of extracted, state how put up with lowest price delivered Cincinnati. Comb honey, state grade and how packed with lowest price delivered Cincinnati. We are always in the market for white honey if price is right.

**C. H. W. WEBER & CO., 2163-65-67 Central Ave., Cincinnati, O.**

---

**QUEENS** **PACKAGE BEES** **QUEENS**

**FULL COLONIES AND NUCLEI**

Our bees are hustlers for honey, prolific, gentle, very resistant to European foulbrood, our customers tell us. For years we have been shipping thousands of queens and pounds of bees all over the United States and Canada. We are continually getting letters with statements such as the following: "Well pleased with your stock; best we ever had. The bees we got from you are the tops (best) out of our 225 colonies; bees arrived in fine shape, well pleased," etc. Write for free circular giving details, etc.

We are quoting a lower price for balance of the year, but will still hold up the high standard of Quality First. I have a good proposition for two or three Northern men wanting to come South this fall. Write for particulars.

Queens after July 1st, balance of the y

| | |
|---|---|
| Untested | $1.35 each, 25 or more $1.00 each |
| Select Untested | $1.50 each, 25 or more $1.25 each |
| Tested | $2.25 each, 25 or more $1.75 each |
| Select Tested | $2.75 each, 25 or more $2.00 each |
| Breeders | $5.00 to $15.00 |

| | |
|---|---|
| 1 pound pkg. bees, | $2.25 each; 25 or more, $2.13 each |
| 2 pound package bees | $3.75 each; 25 or more, $3.56 each |
| 3 pound pkg. bees, | $5.25 each; 25 or more, $4.98 each |

Add price of queen wanted when ordering bees. Safe arrival guaranteed within 6 days of here.

**NUECES COUNTY APIARIES, E. B. AULT, Proprietor CALALLEN, TEXAS**

---

**"SUPERIOR" FOUNDATION. Yes, we are ready for the rush**

Many tons now ready for shipment, and our machines are running to utmost capacity. Use the best. If your dealer can't supply you, write us for price, stating quantity required. We also accept beeswax for foundation or supplies

"Everything in Bee Supplies."

**SUPERIOR HONEY CO., Ogden, Utah (Manufacturers of Weed Process Foundation)**

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*Southern Headquarters*

**Reliable Three-Banded Italian Queens**

For several years our queens have been used and recommended by a number of the foremost beekeepers in the United States and Canada. We cannot afford to disappoint them, and we *will not* disappoint you.

Having several hundred colonies in outyards to select breeding stock from, and large, well-equipped queen-rearing yards, we are sure we offer you something good. We pay special attention to honey-gathering qualities, but do not forget gentleness, beauty, etc. Our queens are good to look at, and their bees a pleasure to work with.

*Prices*: Untested, $1.25 each; six, $7.50; twelve, $13.50; fifty or more, $1 each. Tested, $2 each.

Prompt service, safe arrival of queens, and satisfaction, we guarantee. Any queens that prove to be mismated will be replaced free of charge. No foulbrood or other contagious disease has ever been in our vicinity.

**W. D. ACHORD, Fitzpatrick, Alabama**

**WESTERN BEEKEEPERS!**

We handle the finest line of bee supplies. Send for our 68-page catalog. Our prices will interest you.

**The Colorado Honey Producers' Association, 1424 Market St., Denver, Colo.**

**GOLDEN QUEENS 1921**

Golden and three-band queens, untested $1 each, or 6 for $5; $80 per 100. Virgin queens 50c each, or $40 per 100. All orders will be filled promptly, or parties notified just when to look for them. Reasonable satisfaction to everybody.

**R. O. COX, Rt. No. 4, Luverne, Ala.**

# RE-QUEEN

August is the month to requeen and prepare for winter as well as next year's honey crop. Desiring to secure our stock, many purchase a number of our guaranteed queens in August or September and from them select their breeder for the following season. As the prices of nearly all commodities are being reduced, we are accordingly reducing our prices of queens, this reduction to take place August 1st. We have sold breeding queens to many large honey producers and queen breeders throughout the United States, Canada and other parts of the world and all are much pleased with our stock. A notable example of these is J. E. Wing, of California, one of the largest queen breeders and shipper of pound packages in the world. He has purchased breeders from many sources in the past and writes:

"This season the Jay Smith strain has been secured and these are equal, if not superior to anything I ever had."

Hundreds who have purchased our guaranteed queens in the past, speak in highest terms of our stock. In the main, the reasons they give for preferring our stock are because they are gentle, they are of uniform yellow color, showing good breeding, because they are excellent for eradicating European foulbrood and for the fact that the queens are large, indicating a capacity for heavy egg production, which means strong colonies that get the big crops of honey.

Remember, I guarantee pure mating, safe arrival and general satisfaction. I send out but one grade of queens, and that the very best I am capable of producing. If any queen should ever prove other than a first-class queen, I shall consider it a favor if the purchaser report the matter to me that I may have the opportunity to replace her.

A card will bring our catalog.

**PRICE LIST AFTER AUGUST FIRST**

1 to 4, inclusive, $2 each; 5 to 9, inclusive, $1.95 each; 10 or more, $1.90 each. Our very best breeders, $12 each.

**JAY SMITH, Vincennes, Ind.**
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| Standard body, 10-frame, full sheets, wired | 64 at $291.20 |
| Standard body, 10-frame, no foundation, not wired. | 10 at $24.50 |
| Standard body, 10-frame, kd., 5 in box, 6 boxes | 30 at $51.45 |
| Metal covers, with inner covers | 50 at $91.00 |
| Reversible cypress bottom boards | 50 at $57.05 |
| Wax foundation, full sheets, medium | 75 lbs. at $48.30 |
| $563.50 f. o. b. Buffalo. | $563.50 |

H. B. MILLER, Langs Farm, BUFFALO, N. Y.

A SUPERIOR QUALITY
AT LESS COST

# SUPPLIES

A SUPERIOR QUALITY
AT LESS COST

All of the supply manufacturers have at last reduced their prices, but, as a beekeeper pointed out to us last month, the reduction in prices made by some manufacturers is not nearly as great as the reduction in prices of honey.

This is perfectly true.

Our sympathy in the campaign for low prices has been entirely with the beekeeper, and a comparison of the prices as listed below will show that we can save the beekeeper money on supplies.

These supplies are made by the Diamond Match Company and are of a superior quality.

Hives, Supers, etc., listed below are in the flat, and are complete with Hoffman Frames, nails, metal rabbets and all inside fixtures

### ONE-STORY DOVETAILED HIVE

| | |
|---|---|
| Five 8-frame | $13.50 |
| Five 10-frame | 14.30 |

### FULL-DEPTH SUPERS

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|---|---|
| Five 8-frame | $6.70 |
| Five 10-frame | 7.60 |

### SHALLOW EXTRACTING SUPERS

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| Five 8-frame | $5.00 |
| Five 10-frame | 5.50 |

### NO. 1 STYLE COMB HONEY SUPERS

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| Five 8-frame | $4.80 |
| Five 10-frame | 5.25 |

### STANDARD HOFFMAN FRAMES

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| 100 | $7.20 |
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| Medium Brood | | Thin Super | | Light Brood | |
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| 5 lbs. | 74c per lb. | 5 lbs. | 80c per lb. | 5-lb. lots | 76c per lb. |
| 25 lbs. | 73c per lb. | 25 lbs. | 79c per lb. | 25-lb. lots | 75c per lb. |
| 50 lbs. | 72c per lb. | 50 lbs. | 78c per lb. | 50-lb. lots | 74c per lb. |

Aluminum Honey Combs as now made by Duffy-Diehl Co. are meeting with success wherever used. We carry these in stock to supply eastern beekeepers.

**HOFFMAN & HAUCK, Inc., Woodhaven, N. Y.**

# PERFECT SECTIONS OF HONEY

are not entirely the result of perfect lumber, but depend also on the bees, the honey flow, the care of the beekeeper and the foundation used.

**Dadant's Foundation** will aid in securing such perfect sections because it has all the qualities necessary for the most practical use, and for the most fastidious section honey producer.

Have you made the highest percentage of number one sections from your season's work? **Dadant's Foundation** has helped many a beekeeper add to his average.

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These apply to No. 1 grade of goods only.
Also ask for bargain list on "Odd Lot" goods.

## ITALIAN QUEEN BEES

August is the season for requeening in most parts of the U. S. A., just at the end of the honey flows. Arrangements have been made with one of the best Southern queen bee breeders to furnish 3-banded Italians to enable beekeepers to introduce better stock. Prompt shipment, safe arrival and satisfaction guaranteed in U. S. A.

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AMERICAN BEE JOURNAL

VOL. LXI—NO. 8 HAMILTON, ILL., AUGUST, 1921 MONTHLY, $1.50 A YEAR

# BEEKEEPING IN MARYLAND

## An Outline of the General Conditions and of the Nectar Resources of an Eastern State—By G. H. Cale

THE topography of Maryland is such that in traveling from Oakland in the Allegany Mountains to Ocean City, on the Eastern shore, a distance of over 300 miles, a range of altitude is encountered from over 3,000 feet to sea level. According to altitude, the State may be divided into three distinct regions, (a) the Coastal plain, (b) the Midland region or Piedmont, (c) the Mountain region.

The Coastal plain is separated into the Eastern and Western shores by the Chesapeake Bay and takes in the area east of an arc extending from Washington, D. C., to Elkton. Much of the Eastern Shore is included in two low terraces, with an average elevation of 80 feet above sea level. In places along the coast, however, especially in the south and about the bay, are many thousands of acres where the soil is saturated, giving rise to extensive marshes often 2½ miles in width and frequently so salt that only a few plants can live in them. The total swamp area, as given by Shreve, Chrysler, Blodgett and Besley, in Vol. 3 of the Maryland Weather Service "Plant Life in Maryland," is 276,736 acres, of which 128,960 acres are in Dorchester County. In the uplands there are also numerous swamps where cedar and cypress abound. Through all the Eastern Shore are great numbers of sluggishly flowing streams of all sizes, often of an amber hue from the evergreen swamps. The mouths of the permanent streams extend as broad estuaries.

The Western Shore has a greater elevation, rising to a maximum of 290 feet. The surface is level, but sharply cut by streams, especially in the southern part of the Chesapeake-Potomac peninsula, and at the mouths of the rivers there is frequently a sharp rise from tide level to 100 feet or more. Marsh areas are restricted to the bay shore in Harford County.

The Midland region extends from the "fall line" at the west limits of the Coastal plain to the eastern part of Allegany County. The eastern half is at a level of 480 to 850 feet, with a fairly uniform surface dissected by streams, but the western part is at a much higher elevation, containing low mountain ranges with fertile valleys between. The most important of the valleys, those in which Middletown and Hagerstown are situated, are separated by the Blue Ridge Mountains, which rise as high as 2,000 feet. At the western edge of the Midland is a series of narrow valleys and steep ridges terminating in Allegany County at a 1,500 foot elevation.

The mountain region is entirely above 1,500 feet and contains the Big Savage and Great Backbone ridges, rising to 3,200 feet. The highest elevation is 3,342 feet, near Table Rock, in Garrett County. The valleys and bottom lands bordering the streams are often very fertile, and along the upper waters of some of the streams are frequent swamps.

Because of this great diversity in topography there is a wide variation in the flora throughout the state and

Peach orchard in the Upper Midland.

also a great difference in the soils and in the agriculture adapted to them. The climate obviously has a wide range and consequently a great effect upon the growing season and upon the distribution of plants. Some understanding of these differences is necessary in studying the nectar resources of the State.

The rainfall is uniform and well suited to plant development, and some 1,800 to 1,900 species are to be found, a great number with a wide distribution through eastern North America. The chief vegetation is forest trees, and woodlands occupy about one-third the area of the State, with the smallest percentage in the center. The effect of the differences in altitude, climate and soil is strikingly shown in the type of flora to be found in the eastern and western parts of the State. In the mountain regions, species occur whose chief range is northern United States, while in the eastern part much of the vegetation is related to that found in the tidewater Carolinas and Virginia.

### The Climate

Weather records show a difference of 82 days in the last occurrence of frost between Garrett County in the west and Worcester County in the east. Also at Sunnyside, Garrett County, the average date for the last occurrence of 40 degrees comes 50 days after the last occurrence of 32 degrees. At Pocomoke, Worcester County, the interval is only 9 days. At the latter place, therefore, spring comes quickly with warm nights, while at Sunnyside it comes slowly, with many cool nights. The usual difference for the occurrence of spring in the two places is about 5 weeks. At Baltimore, due to the tempering influence of Chesapeake Bay, spring comes 12 days earlier than at Pocomoke, although the latter is much further east and south.

In the mountain region the winters are quite cold and even, but in the east great variations occur, especially in the lower Midland and shore regions. The records of the Weathe Bureau station at Great Falls show a range of temperature in December from 68 degrees to 0 degrees, and in May from 96 degrees to 28 degrees. The soil survey of Montgomery County, by Carter and Hull, gives a mean temperature of 53.8 degrees for the Piedmont, with the last killing frost on May 12, and the first killing frost in fall on October 3.

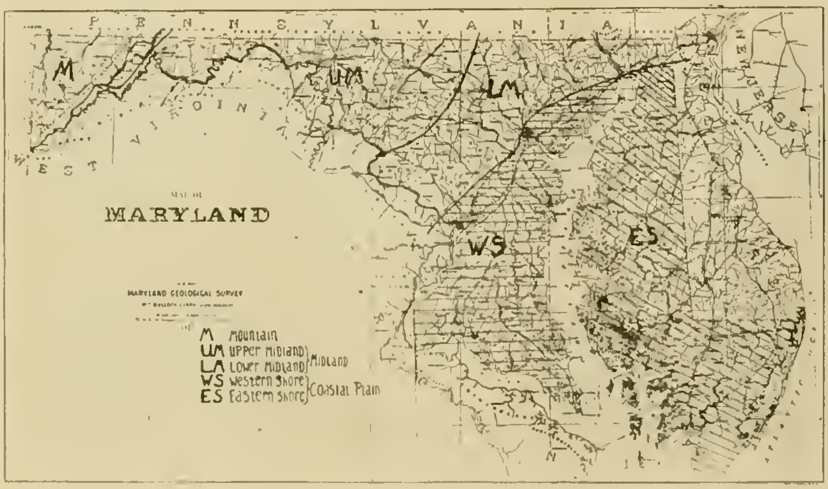
### The Eastern Shore

Sandy loams and sands predominate in the northern and southeastern counties, and clay soils are extensive in the counties along the Bay. Forests occupy about one-fourth the area, being most extensive in the south, where coniferous trees abound. Some of the purest stands of loblolly pine in the United States occur here. In the northern part deciduous trees predominate and in parts of Cecil County chestnut and chestnut oak form a large part of the forest area.

The lighter soils are well adapted to truck crops, and great quantities of vegetables are raised and shipped to northern markets. In the south considerable land is devoted to tomatoes and melons. Fifty per cent of the tomatoes grown in the United States for canning purposes are grown in Maryland, most of them in this region. Smaller truck crops are raised nearer Baltimore, strawberries and sweet potatoes being noticeable among them. On the deeper loams of the central counties corn and wheat are important. The peach crop from the eastern shore is of considerable importance, and the orchard industry is rapidly growing in the lower counties.

### The Western Shore

On the Western Shore there is much sandy loam of good quality. Here it is that the early settlers became so well established, especially in the region known as Southern Maryland. Prior to 1865 much of this region was highly cultivated, tobacco being the chief crop because of its quick cash value. As fast as one piece of land ran out, another clearing was made and new land sowed, a practice which resulted in soil depletion, and for 40 years the region has been neglected by man. In St. Mary's and Charles Counties alone fully one-half of the land is uncultivated. Forty-two per cent of the area is in forests. Tobacco is still grown extensively and in some sections wheat and corn are important. There is no record in Maryland, however, of nectar in any amount being obtained from tobacco, since in the cultural system used the plants are cut before they bloom. In Anne Arundel County strawberries are an important crop, the most of them being sold in the Baltimore market. The sandy river necks south of Baltimore produce quantities of melons, peas, beans, strawberries and small fruits.



The natural divisions of Maryland.

### The Lower Midland

The chief soils here are loams and clays, and in nearly every county is a narrow strip of peculiar formation known as the Serpentine Barrens, containing no lime or potash, but rich in magnesium compounds. The resulting flora is different from any other in the State, but fortunately this soil is quite limited. About one-fourth the area is forested, but mostly as small tracts scattered through a highly cultivated farming country. The largest acreage of improved land in the State is found in this section. Corn and wheat are the big crops, and in Harford and Cecil Counties considerable sweet corn, tomatoes and other vegetables are raised for canning purposes. Hay is important in Baltimore, Carroll, Montgomery and Harford Counties and considerable alsike clover is used in the seed mixtures. Dairying is also important in these counties, and white clover is abundant.

### The Upper Midland

In the Middletown and Hagerstown Valleys clay loams predominate, overlying Shenandoah limestone. These soils are excellent and clover thrives wherever the lime is sufficiently available. Sandy loams and sands are more abundant in the west. Here the forested area is the least in the State, amounting to only one-fifth of the acreage, most of which is in Allegany County. In this county 50 per cent of the land is in forests. At one time the Middletown Valley north of Frederick was the richest agricultural section in the United States. Corn and wheat are the big crops. The higher lands to the west, especially around Hancock, are devoted to extensive apple orchards, one orchard alone embracing 600 acres. Some quince orchards are also found, and at the northern end of the Blue Ridge peaches have long been a noted product. About Hagerstown considerable acreage is used to grow crops for canning purposes.

### The Mountain Region

In the mountains the shales and sandstones have worn down into sandy loams and sands. The forests are extensive and occupy fully two-thirds of the entire area. The agriculture is, of course, limited, and the most extensive industry is mining. Sheep are grazed in numbers, and seed potatoes are becoming an important crop. In the cool nights and warm days buckwheat does well and is raised to quite an extent.

### Distribution of Two Principal Honey Plants

A discussion of Maryland's chief honey plants, clover (**Trifolium repens** and **T. Hybridum**), and tulip-poplar (**Liriodendron tulipifera**), will serve to show the influence these factors have on the nectar resources of the State. White and alsike clovers occur in considerable quantities and tulip-poplar forms a generous percentage of the forest areas. By nature, however, the clover and tulip are opposites. Clover, a resident of the North, is found in cultivated or open lands, while tulip-poplar, a relative of tropical plants, is confined to the forests. Therefore, to state that clover and tulip are common throughout the State is misleading.

### Clover

Since clover is confined to lands not under constant cultivation, its abundance will be determined largely by the character of the agriculture. In the Midland, where dairying is an industry or hay is raised in large amounts, alsike and white clover are extensively found. On the Eastern Shore, wherever clover will grow, it does well, but here again the agriculture limits its abundance, and in some soils it is impossible to secure a stand of it. In the mountain region clover is not found to any extent.

Clover is not at its optimum except where lime is abundant and its fame as a honey plant comes from glaciated regions where the soil is rich in lime. None of the soils of Maryland are of glacial origin, and the lack of native lime is shown by the vegetation. Chestnut and chestnut oak are commonly found and neither of these are tolerant of lime. There is more lime in the Midland region than elsewhere.

Temperature also has a decided bearing on the nectar secretion from clover, and where clover thrives best in the State the temperature is not long favorable. It has been shown by Hawkins that, in Wisconsin, on glaciated soils rich in lime, the nectar yield from clover ends when the daily mean temperature reaches 74 degrees, although clover continues to bloom thereafter. The following shows the mean daily temperature for a ten-year period in Maryland during the blooming period of clover

**June**

| | |
|---|---|
| Garrett County | 64 degrees |
| Allegany County | 70 degrees |
| Frederick County | 71 degrees |
| Baltimore County | 72 degrees |

**July**

| | |
|---|---|
| Garrett County | 68 degrees |
| Allegany County | 74 degrees |
| Frederick County | 77 degrees |
| Baltimore County | 77 degrees |

**Daily Range—June**

| | |
|---|---|
| Garrett County | 25 degrees |
| Allegany County | 29 degrees |
| Frederick County | 22 degrees |
| Baltimore County | 17 degrees |

**July**

| | |
|---|---|
| Garrett County | 24 degrees |
| Allegany County | 30 degrees |
| Frederick County | 21 degrees |
| Baltimore County | 11 degrees |

Judging from this, the best results would be expected in Garrett and Alleghany Counties, but clover is not found here in any quantity. It is most abundant in the Midland, and when the temperature and rainfall are just right good crops are obtained. This happens about once in three years. If the bees are at the proper strength a little clover honey may be secured every year.

### Tulip-Poplar

The tulip-poplar, or tulip tree, is a more certain yielder of nectar, blossoming during May, just before the clover flow begins. The honey from it is a dark amber. When both clover and tulip are present in quantity in the same locality the latter will insure a crop where the clover fails. Such situations are not common, however, and require careful seeking. The tulip is not only a forest denizen but it has a decided choice as to the soil in which it sets its roots, and it is limited, also, in its abundance by the severity of the climate. In volume 111 of the Maryland Weather Service, where much of this information may be found in detail, the distribution of the tulip tree is given as general from the swampy lands of the east to the mountain slopes of the west. However, it is not found directly in the swamps of the Eastern Shore, although its presence often indicates a soil too moist for agriculture. It is most abundant on the dry flood plains of the higher lands.

On the Western Shore it is not found in the lowland forests, but is plentiful in upland depressions and on slopes where the moisture in the soil is normal. On the soil covered hillsides of the lower Midland it is one of the predominant species, often forming 80 per cent of the forest. Some tulip is found in the flood plains associated with maple, oak, gum and elm. It is also abundant on top lands where Cecil clay prevails and in Harford County, except on the uncultivated gravel areas, three to five per cent of all the trees are tulip. The peculiar serpentine barrens prohibit its growth. It so happens, however, that the soil best suited to it is also good wheat soil, and consequently wheat is extensively raised in this section, thus limiting the abundance of the forest area.

In the upper midland region it is found only on the lower slopes and further west it is confined to the valleys, where it often forms 20 per cent of the forest. In the upper Monocacy Valley and in the region north of Westminster, tulip is scarce. It is not abundant in the Blue Ridge, although found in the valleys near North Mountain. In the mountain region it is rare or absent, either on the slopes or in the valleys. Where it is best adapted, therefore, tulip-poplar is limited by the well developed agriculture. On the other hand, in Garrett County, where 64 per cent of the land is still in forest, it occurs rarely.

Although this is perhaps a discouraging picture, there is the saving fact that the tulip is a prolific yielder of nectar and when it is in bloom the large, showy, cup-like blossoms drip with sweetness. The liquid is rich and thick, with all the characteristic taste of the ripened honey, although in a less degree. A few trees give a large quantity, therefore, and there are good locations in the Midland for sizable apiaries. I have never seen bees act so wild over nectar as they do when the tulip begins to yield. It is a verity that they "go crazy." A most peculiar thing about their behavior, however, is that if clover or locust begin to yield abundantly at any time when the tulip is in bloom, they gradually desert the latter and work entirely on the former, leaving the big tulip blossoms dripping with unrecovered sweetness.

### The Extent of Beekeeping

The early history of beekeeping in Maryland is brightened by the names of some men of considerable note. Langstroth was a resident of Baltimore for several years, and Samuel Wagner published the American Bee Journal in the adjoining District of Columbia, at Washington. Mr. Wagner and Mr. Richard Colvin, of Baltimore, were the first to import Italian bees to this country from Europe, in 1859. Mr. Samuel Cushman, one of the first teachers of beekeeping in an agricultural college in the United States, has long been a resident of Baltimore, and an active worker for

A tomato field on the Eastern Shore.

the beekeeping interests of the State. He formerly taught beekeeping at the Rhode Island State College.

In a bulletin, "Beekeeping in Maryland," by Symons and McCray, issued by the Maryland Agricultural College Experiment Station, in 1911, it is estimated that there are 5,000 beekeepers in the State, reporting a total of 28,000 colonies, a little better than five colonies to each apiary. Probably these figures have not greatly increased since that time. There are some apiaries of 100 to 200 colonies and quite a few of 50 or more. Eighty per cent of the bees are in the West Shore and Midland regions and over 74 per cent of the bees are in modern equipment, but in instances the box hive still persists, especially on the Eastern Shore and in the mountain regions, where beekeeping is of less importance.

Some of the largest apiaries are found near the cities of Washington, Baltimore, Frederick, Hagerstown and Cumberland, probably because these are good markets for honey. There is a good State Beekepers' Association under the leadership of the State Entomologist, E. N. Cory. A tendency exists to cling to the production of comb honey, although conditions over the State as a whole are such that a good grade of comb honey cannot be secured. Where clover is in dependable amounts, however, comb-honey production is profitable.

The average yield of honey per colony is about 30 pounds, a low yield, due to the fact that the honey flow comes extremely early, before the colonies are sufficiently strong to take advantage of it. When colonies are wintered as they should be, brood-rearing usually starts in March. Maples bloom in April, followed by fruit and other early sources of nectar and pollen. Tulip-poplar comes in early May and is succeeded by clover in June. In July and August there is a long dearth, often with honeydew in unwelcome abundance, followed by a flow from the usual fall flowers. This gives sufficient surplus for winter but not for spring brood-rearing, and about once in four or five years an unusually cold winter, with few flight days, causes a consequent heavy loss of bees. The season following such a winter is often a good one for honey production and naturally, under these conditions, only the careful beekeeper gets a crop.

One hundred pounds per colony is not unusual when the bees are in the right condition.

### The Nectar Sources

Maples—Acer saccharum, sugar maple, April. Important in the upper Midland.

Acer rubrum, red maple, April. General.

Acer saccharinum, soft maple, April.

All important in early brood-rearing.

The writer has also seen nectar in the supers in considerable amounts in the vicinity of Washington from plantings of Norway maple, Acer platinoides.

Tulip-poplar—Liriodendron tulipifera, May 10-June 1. General, but most abundant in the Midland region. Least abundant in the mountain region. One of the most plentiful sources of surplus.

Black Locust—Robinium Pseudo-acacia. Late May-early June. Eastern Shore, Carroll and Montgomery Counties, Hagerstown Valley and Cumberland hills, only on slopes in mountain region. This is an uncertain source, but when it does yield the flow is abundant. In 1920 the bloom was unusually heavy and large amounts of honey were obtained from locust. The honey is white and of fine flavor.

White clover—Trifolium repens. June. General except in forest region. Depends on weather conditions but gives a fair crop one year in three.

Alsike clover—Trifolium hybridum. June. Coming into use generally in farm practices and also does well where white clover is not of much importance.

A mountain view in Western Maryland.

Basswood or Linden—Tilia americana. May-June. Midland, Blue Ridge, North Mountains and Tonoloway Ridge. About Roundtop, southwest of Hancock, linden is often 15 to 20 per cent of the stand. It is often common in the mountain zone, but is scarce on the ridges.

Sumac—Rhus sp. July-August. In restricted locations in the West Shore, Midland and Mountain regions.

Chestnut—Castanea dentata. August. Abundant, especially on the hills and in the mountain region. This is a questionable source of nectar, but many beekeepers claim to secure a yield from it.

Sweet clover — Melilotus alba. From July on. Important on Eastern Shore and around the bay. Some sweet clover is also found in the Midland.

Blue thistle, or Viper's bugloss—Echium vulgare. July. Most important on fallow valley soils in upper Midland.

Buckwheat—Fagopyrum Esculentum. August-September. In extreme west only. Does well on soils suited to red spruce, and the latter is most abundant in Garrett County.

Goldenrod—Solidago sp. August-September. General.

Aster—Aster sp. September-October. General.

Joe-pye weed or boneset—Eupatorium purpureum. Lowlands, both shores and Midland.

Sweet pepper bush—Clethra alnifolia. East shore along coast.

Professor E. N. Cory, of the University of Maryland, is well acquainted with the nectar resources of the State, and he makes the following additions to the honey plants:

Common chickweed—Alsine media; winter cress—Barbarea stricta; dandelion—Taraxicum Taraxicum; crimson clover—Trifolium incarnatum; wild black raspberry—Rubus occidentalis; black gum—Nyssa sylvatica; hairy vetch—Vicia villosa; staghorn sumac—Rhus hirta; purple milkweed—Ascelopias purpurascens; mountain mint—Koellia virginiana; mountain sumac—Rhus copalina; narrow-leaved mountain mint — Koellia flexuosa; muskmelon—Cucumis melo.

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## HOME-MADE ELECTRIC IMBEDDING DEVICE

By Ransom A. Race

Electricity has supplanted the older methods of imbedding the wires in the foundation, but even with the use of electricity, we have had our troubles, and any simple way of giving a flexible use of the current has not come to my notice in any of the journals.

I have tried flatirons, toasters, light dimmers and various lengths of iron wire put into the circuit as resistance. They do the work very well as long as we have one length and size of wire to set. If we want to set two wires in a shallow frame or four wires in a Langstroth frame or six wires in a Jumbo frame or an oblique wire in any frame, a great deal of fussing and figuring are necessary in order to get the correct amount of "resistance" in the circuit to meet the varying conditions. Perhaps if you use No. 26 wire, as I do, some friend may bring in 10 or 20 frames wired with No. 30 wire and ask you to set them. Then your resistance is again all upset, because the electrical capacity of the No. 26 wire is about six times as great as the No. 30 wire of the same length.

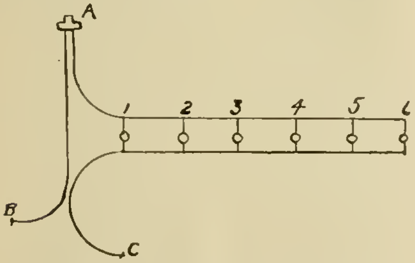
Small "transformers" are a great improvement over flatirons, etc., but a transformer that will give a delicate control of the current to meet the above conditions would cost a "pretty penny," so only a few would benefit by it.

Electricity is usually delivered to the consumer as a current of 110 volts, 30 or 60 amperes and 60 cycle, alternating; some have a constant current; it makes no difference in the application of my method what kind of strength of current you have, as long as you have it.

All methods of controlling the current I have seen, try to do so by reducing the voltage, seemingly forgetting that a current is made up of other components besides its "force." All currents have also "volume," or amperage. Now, within certain limits, and we are well within those limits, with the currents and wires we are discussing, a small wire will "accept" a current of small voltage and large amperage, or one of large voltage and small amperage, without heating, but not a current of large voltage and large amperage.

Instead of trying to vary the voltage in our small wire let us turn to the amperes and let the volts alone. A piece of No. 30 wire 18 inches long will carry a current of 110 volts and one-half ampere without heating, but a current of 110 volts and 1 ampere will heat it considerably. So let us see if we can in any way apply this principle to our use.

Take 6 open work porcelain receptacles and 5 32 candle power carbon lamps and 1 16 candle power carbon lamp and construct a controlling board in this way:



Resistance circuit for electrical imbedding.

A, plug to electric light socket; wires are the flexible lamp cord unwound.

1, 2, 3, 4, 5 are the 32 candle power lamps.

6 is the 16 candle power lamp.

B and C are the two points used to touch wires in the frames to be heated.

Each 32 candle power lamp that is screwed down tight will draw 1 ampere of current, and the 16 candle power lamp will draw one-half ampere.

To heat one length of wire across the frame it takes about 1½ amperes, to heat all 4 wires at once takes about 5 amperes. If you want to heat one wire only, screw down No. 1 and No. 6 lamps; then a current of 110 volts and 1½ amperes is delivered at points B and C. If you wish to heat 2 wires it takes about 3 amperes. Screw down lamps 1, 2, and 3, leaving the others loose, and you have a current of 110 volts and 3 amperes at the points B and C. You see, you can get a current varying from 1½ to 5½ amperes with this board. If one-half is not small enough a unit, put in an 8 candle power lamp which only draws one-fourth ampere. If 5½ amperes is not enough, add more lights in the same way, and as many as you wish.

I mention the carbon lamps because they are not easily broken and because they happen to draw 1, ½ and ¼ amperes. While tungsten lamps can be used just as well, the amperage drawn does not fit itself so well for this usage; if you use tungsten lamps use all of one size except the last one, and that should be as nearly as you can get it, only one-half as strong.

The points used to touch the wires are pieces of No. 14 insulated copper wire. Scrape off about 1 inch of the insulation at each end, flatten the tip of one end in a vise and file square on end of flexible cords B and C to other ends and cover with tape. Simple, but very effective.

Have you foundation to cut? All right, wind the ends of a short piece of No. 26 or No. 24 copper wire around points B and C, turn on the current and draw wire across foundation where you wish cut to be made.

Massachusetts.

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## THE FOULBROOD SITUATION IN BRITISH COLUMBIA

By W. J. Sheppard

With the exception of the coast region, known as the Lower Mainland, or the Fraser Valley, the whole of British Columbia is practically free from bee diseases.

"The Fraser River, 750 miles long, has its source in the Yellowhead Pass, close to the foot of Mount Robson. After emerging from the mountains, first northwesterly, and thence almost due south to within a few miles of the International boundary, it turns westward through a wide valley intersecting the coast mountains. It reaches the sea amidst an extensive fertile delta of its own making. The prevalence of moisture-laden winds from off the Pacific ocean, during the winter months, causes heavy rains. During the summer months the ever-changing tidal waters tend to keep the day temperature moderate while the nights are usually cool."

In the Fraser Valley, where European foulbrood is much in evidence, it may be considered as endemic. The moist climatic and other conditions that prevail, are peculiarly favorable to its growth and propagation, so that it exists in a severe and virulent form. It has been present here for a long time and consequently obtained a firm hold. This was not realized until a special inspection was made, under the direction of the Department of Agriculture, in 1918, in a portion of this area. The disease is very bad in the adjoining territory in the State of Washington. As bees cannot be prevented from flying across the international boundary line, it is obvious that there is always the certainty of re-infection from this source, after a clean up, unless the same remedial measures could be followed on both sides, this being one of the difficulties beyond their control, that the inspectors have to face.

Mr. J. E. Crane, in the February number of "Gleanings," is quite correct when he says that "European foulbrood is much more virulent on some soils and in some locations than others. In some sections it will disappear of itself, while in others it is almost impossible to eradicate it."

As the Fraser Valley has been declared an infected area, by the Minister of Agriculture, under the provisions of the Apiaries Act of 1919, wherein the moving of bees is prohibited without a certificate of inspection, the disease should be prevented from spreading beyond these limits, especially as the mountain ranges form such an effective natural barrier of protection to the interior. The beekeepers themselves can do a good deal to assist in this by being loyal and patriotic enough to respect this necessary regulation, and not try and evade it.

When the special inspection was made in 1918 it was found that beekeeping was mostly carried on in a perfunctory and primitive manner. Comparatively few were experienced and understood the art of keeping bees profitably. Most of the hives used were single-walled, without any additional protection, which is really necessary in this cool climate, of various patterns and sizes, and there were a great many box hives. Many of the beekeepers are farmers who, as a rule, have not much time to devote to this branch of agriculture; consequently the bees were very often the last to receive attention. It was found, also, that nearly all the colonies consisted of black bees, which are usually looked upon as being the most susceptible to disease.

During the last two years since the inspectors have been working in this territory (three in 1919, and four in 1920), there has been a marked improvement. The box hives have been done away with, improved and up-to-date hives and appliances have been introduced and brought into use, and many hundreds of colonies have been requeened with good Italian queens. The inspectors have taken a keen and personal interest in their work, and there can be no better method of imparting information and instruction than by personal visits to the beekeepers made possible by the present system of inspection.

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THE STAFF
C. P. Dadant .......................................Editor
Frank C. Pellett ......................Associate Editor
Maurice G. Dadant ................Business Manager

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# THE EDITORS' VIEWPOINTS

## Cost Accounting

We call the attention of our readers to the article by Mr. Elmer T. Beach in this Journal on "Cost Accounting in Beekeeping."

Mr. Beach has had many years' experience in accounting and is now quite a successful beekeeper. He gives an outline of just what should be considered in getting at the actual cost of producing honey.

This subject has been much too long neglected by the beekeepers, who are just now realizing that in many instances honey is being produced at a loss and that they had best discontinue their beekeeping and go into some more remunerative line unless they can reduce cost or in some other way offset the high production cost.

We will be glad to have suggestions from our readers for further articles along this line, as we feel sure Mr. Beach is competent to handle this subject, both from the beekeeping standpoint and from that of the expert accountant.

## Requeening

In our Question and Answer Department, the query is made of Dr. Miller's method of requeening. We believe that his ideas upon this subject are summed up in his answer to this question in the "Thousand Answers to Beekeeping Questions," page 201: "No need to requeen if the queens are good."

## The C. C. Miller Fund

The Memorial Fund inaugurated in honor of our departed friend and educator has not turned out as large as anticipated. We give in another column the list of subscriptions. To this will be added that secured by Gleanings, which will be published in that magazine. There is also a list being circulated in England by the Bee World. At last accounts this amounted to something over 16 pounds. Another list is made up in South Africa. Dr. Miller was an international authority, even in foreign language countries, but he was best appreciated in English-speaking regions.

A number of subscriptions will be supplied by the larger beekeepers, when the list is closed. The majority of the committee in charge are of the opinion that much more may be and should be secured. So the list will be kept before the public until enough is secured to make a respectable showing. We ask our readers to refer to the letter received from Dr. E. F. Phillips, of Washington, published on page 323 of this issue. We agree fully with him. Dr. Miller was too big a man for the beekeepers of America to be satisfied with the modest sum obtained thus far.

## Hot Weather Ventilation

The careful beekeeper has looked after the ventilation needs of his colonies during the hot weather. When it begins to cool off it is just as necessary for him to see that the colonies do not have too much of it. "Staggering" the supers, which may have proven beneficial, will soon be obnoxious, and the bees will show their opinion of it by trying to close the extra openings with propolis. Do not wait till the weather becomes very cool to reduce the amount of upper ventilation, or close it up altogether. A large amount of bottom-board ventilation may be left till very late in the season if the colonies are powerful. But upper ventilation is to be done away with long before frost.

## An Italian Edition

A new edition of the extensive work of De Rauschenfels, "L'Ape" (The Bee), published in Milan, Italy, by U. Hoepli, is on our desk. This work, revised by Vincenzo Asprea, the well-known associate editor of L'Apicoltura Italiana, is a large book of 408 pages, of the same size as Root's A B C, and contains most of the modern methods. It gives 17 portraits of leading beekeepers throughout the world. A former edition was published in 1901, with the well-known microscopic studies of Count Barbo. The latter are now entirely out of print.

## Still Another Sweet Clover Bulletin

"Sweet Clover in Arizona," is the title of an 8-page bulletin gotten out by the College of Agriculture of Arizona and written by S. P. Clark, Assistant Agronomist.

Mr. Clark describes the four varieties of sweet clover and gives the soils required, the growing and handling and the place of sweet clover in soil rotation.

The principal value of sweet clover to Arizona agriculture is its adaptability to such a wide range of soils. It will grow on soils too alkaline for alfalfa, and is also adapted to many other soils which may be fitted in this manner for later planting of alfalfa.

Mr. Clark advises the planting of sweet clover seed in October or November, especially when the unscarified seed is used.

Anyone interested in the booklet should write to the University of Arizona at Tucson for Circular No. 34.

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### Michigan Meeting

The beekeepers of Michigan will hold their summer meeting at Alpena, August 3 and 4. The Michigan meetings are always well attended and we are told that this is expected to be one of the best ever held.

### Mississippi Summer Meet

The meeting, which was held June 15, at the home of W. W. Worthington, at Wayside, Mississippi, had an attendance of about 100, and they report a splendid time. W. E. Elam, of Greenville, presided at the meeting.

### A Universal Bibliography of Beekeeping

We are in receipt from Italy of ten copies of De Keller's "Elenchus Librorum de Apium Cultura," a book of 224 pages, published in 1881 and which is said to be the most complete list of bee books in existence. It mentions some 2,000 books or essays on bees, published in the different countries, at different dates, giving author's name, title, size, date, etc., in its own language. We will supply them as long as they last at $1.25 per copy. These are invaluable for college libraries.

### Georgia Beekeepers' Meeting

A short course in beekeeping is to be held in the Chamber of Commerce Auditorium in Macon, Georgia, August 16, 17 and 18. The program is good. The State Entomologist is to be present. A banquet will end the day. For information address L. C. Walker, of Waycross, or Mrs. Madge B. Merritt, Secretary, Brunswick, Georgia.

### Young Queens Lay Few Drone Eggs

Huber, who had no knowledge of parthenogenesis and who wondered how the queen could know when she was about to lay drone eggs, would have been highly pleased, had he been informed of the rule of parthenogenesis which shows that it is only the egg that is not fertilized as it passes by the spermatheca, in her abdomen, which becomes a drone. But he was a very keen observer and had already noticed (New Observations, 10th Letter) that a young queen rarely lays any drone eggs, if fertilized, until she is at least 11 months old. So we know that it is not difficult to prevent a young, healthy queen from laying a too great number of drone eggs, especially if we see to it that but little drone comb is left in her reach. That is another argument in favor of replacing our queens regularly. Mr. Charles Dadant held that the queen finds a certain pleasure in the fertilization of worker eggs as they pass the spermatheca, and that she did not care to lay drone eggs till she became fatigued of this repeated action.

### Adult Bee Diseases

Our friends of the "Bee World," in their June number, suggest that the Nosema disease of the adult bee "exists but in a mild form in America, thanks to the high standard of American bees, evolved no doubt through selective breeding forced by keen competition." We accept the compliment, but would also suggest that the diseases of the adult bee appear to be intensified by damp weather. The "May disease" or "paralysis," whether or not it is caused by the newly discovered "Tarsonemus woodi," or stimulated by the Nosema, is undoubtedly a disease which thrives in damp weather. Wherever we have heard of the May disease, whether in Italy, France, Florida, California, or here in Illinois, it has been during and following a period of damp weather. We conclude, therefore, that our dry climate is much less favorable to it than the climate of England. We are anxious to see it proved that Tarsonemus woodi has been positively ascertained as the main symptom of May disease, and of Isle-of-Wight disease, which have been puzzling the beekeepers of nearly every country for centuries. Evidently our scientists are getting their finger on the spot. We will now need a preventative and a remedy, while at the same time breeding from the best strains.

### Old Combs

Dr. Brunnich's photos of combs, contained in this number, with his interesting article concerning old combs, have been published by us, in 1916, but they will bear reprint.

The coating of the inside of the cells, with a slight film of wax, which is generally called "burnishing," was thought to be only a sort of "polishing" by the bees. But it is well-known that the queen does not lay in cells till they have been refreshed in this way.

Dr. Brunnich's statement agrees with that of others, that the cast-off skins of the larvæ add but little to the thickness of the cells. The excrements, especially those of the drones, have a great deal to do with the increasing darkness and thickness of old combs.

### In England

The June number of the Journal of the Ministry of Agriculture, published in London, contains a very interesting article from the well-known Tickner Edwardes, on the modern beehive. Mr. Edwardes puts himself on record as favoring a thicker-walled hive than those in general use and, if possible, a hive with "dead-air cavity walls not less than three inches thick over all." There is but little doubt that our ordinary beehives, made of so-called inch lumber, which is actually but little over three-quarters of an inch in thickness, are hardly thick enough to insure the bees against quick changes of temperature. The old-time straw skep, in its insulating properties, was very far ahead of the thin lumber hive. It would be good if we could combine the qualities of the old straw skep with the facilities of the modern movable-frame hive, without too much expense.

### Carniolan Beekeeping

Our readers will be interested in the short article on the above subject by Mr. Miklovitch, and in the photos, one of which decorates our cover page.

The hives described are handy for transportation, but to an American, accustomed to a top-opening hive which may be tiered up several stories, these hives, which are confined to one super, would seem exceedingly inconvenient. A modern beekeeper in America can hardly picture to himself any hive but the one with movable ceiling, with the combs removable from the top. With the Berlepsch system, the hives are made like so many closets and the frames are always removable only from the rear. Either the combs run parallel to the outer wall, and in that case every comb has to be removed if one wishes to reach the one nearest the front; or, if the combs are at right angle with the entrance, they must be removed from the end, with pincers.

The Europeans who use this system claim several advantages for it, the main one being the compact shape in which an apiary may be kept, in a country where space is expensive. They also prize the possibility of handling bees and doing the work at any time, even when it rains. There is nothing exposed to robbers during the manipulations and one easily learns a number of methods to simplify the work. But any one who has ever tried hives with hanging frames of the Langstroth system and the tiering up of supers will soon become disgusted with a system which permits of only one super at a time and manipulation from the inside of a closed room.

### Fruit Crop Short in Middle West

According to recent statistics, the fruit crop this year will be much shorter than last. Conditions of apples for 1921 is given as only 41 per cent of 1920 for the United States, and only 32 per cent for Illinois.

Moreover, in many sections, there will be no peaches, pears, plums, and very few berries.

In our experience a short fruit crop means a large demand for honey. Not only should we feel encouraged, but we should use every effort to spread the use of honey as a substitute for canned fruits.

### The Flood in Colorado

In a recent letter from Colorado we learn of the death, by drowning, of Mr. W. A. Dolsen, a beekeeper, at Avondale, Colo. On the night of June 3 the Arkansas River at flood stage completely wiped out his home and apiary, carrying his body with the debris, far downstream.

Mr. Rauchfuss, of the Colorado Honey Producers' Association, states that at least 1,000 colonies of bees were washed away by the floods in the streams from Denver north, while in the Arkansas Valley the losses are said to be very much heavier.

A good deal of sweet clover growing in the bottom lands has been destroyed by being covered with mud. On the other hand, the copious rains in other locations make the outlook for a crop hopeful.

## FIRST AID TO THE BEEKEEPER

By Prof. H. F. Wilson

Co-operatice effort is absolutely necessary for the success of any industry, and until that effort exists there can be no great success in ordinary times, and under adverse conditions lack of organization means severe losses to all.

Bee husbandry has received a great impetus during the past few years and the methods of manipulation have been greatly improved thereby. A great part of this is due to the efforts of research and extension workers. First we must have the information; this is secured by the research worker. Then the knowledge must be carried to the beekeepers. This is done by the extension agent.

But in order to do this the beekeepers must respond and attend the schools and meetings held by the extension agents.

It is often a difficult problem to get the beekeepers to co-operate in the different phases of state and local matters, but it can be done by giving the beekeepers a part in the work.

In Wisconsin we have been working on this problem for five years and the plan of organization and extension work has developed beyond our highest expectations.

Mr. Pellett has asked the writer to give a short outline of our plan for the American Bee Journal.

Our success has been due to two things:

First—A well organized plan.

Second—Thorough co-operation between National and State agents and the beekeepers.

A plan, to be carried out, must have someone to do the work. In our case we have been very lucky in having a number of men to help with the meetings.

At different times we have had Mr. G. C. Mathews, Mr. G. H. Cale and Mr. H. L. McMurry as special agents from the United States Division of Bee Culture, and Dr. Phillips and Mr. Demuth have conducted two summer schools for us.

In the State we have had:

Dr. S. B. Fracker, State Entomologist.

Mr. C. D. Adams, Assistant Deputy in Apiary Inspection Work, and Special Agent for the Division of Markets.

Mr. J. I. Hambleton, Apiarist at the University.

Mr. H. L. McMurry, Special Field Agent working under the co-operative direction of Dr. Phillips, Dr. Fracker and the writer.

The writer has also given much of his time to the organization work.

In addition to these men Mr. E. R. Root, of the A. I. Root Company, has helped at the bee schools, and the G. B. Lewis Company have placed two men at our disposal, Mr. Kennith Hawkins and Mr. E. W. Atkins, who are now serving with us when called upon.

The State is now well organized and all meetings are arranged through the County Agents and the officers of the local associations. There are forty-one local associations in the State, twenty-nine of which are an affiliated part of the State Association and have a representative on the Board of Managers of the State Association. This Board of Managers meets annually to decide on the policy of the Association for the following year.

To carry on the work we plan to hold two meetings a year with each local association. These meetings consist of one winter meeting or a three-day bee school and a summer meeting or demonstration at the yard of some beekeeper.

The publicity work has been almost entirely conducted from our office and our plan is to send notices of the meetings to each newspaper in a county where the meeting is to be held. The first notice is sent out two to three weeks beforehand and the second a week to ten days before the meeting.

The three-day bee schools have proven the most successful method of extension work and they have been well attended by the beekeepers. A general program of each school is outlined and published in the local papers. In some cases mimeographed outlines are sent out to every beekeeper in the country. One local association now sends a printed notice and program to its members.

At several of these schools we have had an average attendance of over 50 beekeepers for each meeting and a total registration of more than a hundred.

As a rule the beekeepers do not begin to come until about noon of the first day and the afternoon of the third day is given over to the local association, so that two full days of instruction can be given.

The beekeepers Chautauqua and field meet has been very well received by the beekeepers and many attend from all parts of the State. This meeting is held always during the third week in August and in 1921 it will be at Chippewa Falls, Wis., during the week of August 15 to 20.

Dr. E. F. Phillips, Mr. E. R. Root, Mr. Demuth, Mr. Kennith Hawkins, Mr. E. W. Atkins and Mr. C. P. Dadant will be with us. Beekeepers from neighboring States are invited to come and meet with us if they so desire.

Wisconsin.

## GLIMPSES OF CARNIOLAN BEEKEEPING

By M. B. Miklovitch

The accompanying pictures show something of Carniolan beekeeping: No. 1 represents one of Mr.. Anton Znidersich's migratory apiaries. These hives are specially erected for moving purposes. Mr. A. Znidersich lives in a location where they have several short honey flows in a season and in order to get advantage of these pastures he made a hive that can be moved with as little labor as possible. There on the wagon are forty hives, twenty on each side, same kind as in the stack. These hives on the wagon cannot be taken apart, as the whole side of the wagon is a wall with partitions. Everything inside is made of very light lumber, but the outside walls are double, with straw between. Each hive opens at the back. The door of the hive has a screen which has to be opened so that the bees get necessary air while on the moving trip. It takes but a few minutes to get such an apiary ready for moving. Picture No. 2 (cover page) shows another of Mr. Anton Znidersich's wagon-apiaries. Posts under the wagon keep the wagon level. Mr. Anton Znidersich operated, before the war, over 1,500 colonies of bees. He has a large number of American hives in his home apiary.

Picture No. 3 shows a beautiful bee house of Mr. Frank Zelenik, of Carniola. This bee house contains forty hives, twenty on each side. Mr. Frank Zelenik keeps his bees as a side line, mostly for pleasure, even though his last year's crop was 45 kilograms per colony, or a little over 99 pounds.

No. 1.—Apiary and wagon of Mr. A. Znedersich.

Picture No. 4 shows one of the bee houses which are used by depot agents through Carniola. This house is made so that it can be taken apart and moved away, if agent is discharged. This type of bee house is common among Carniolan depot agents. Note the pictures on the hives!

Minnesota.

## PLAN FOR FINDING COST OF PRODUCTION—EXTRACTED HONEY

By Elmer T. Beach

The principles behind all cost finding are really very simple. Labor spent in production, expense of operating the production plant, raw materials used, and provision for returning to the producer the amount of his original production investment, these, together with record of the amount of production, give all the necessary data. Nothing elaborate in way of accounts is necessary. It does not matter how the facts are arrived at. It is my opinion that any person producing from as many as ten colonies should know, without guess work, what his output costs. Business conditions may compel him to sell below cost of production, but at any rate he will know who is getting it in the neck if he does.

Productive Investments—First to consider is necessary production investment. For my own convenience I divide these into two parts:

Stack Investment—Constituting:

1. Value of original swarm, whether purchased or produced in your own yards. If produced, for the the sake of uniformity I will value bees and queen at $5 each swarm, and give the producing yard credit on production cost for that amount.
2. Wood work of hive stack sufficient to care for a normal crop; if a Dadant hive, say 1 top and bottom-board, 1 inner cover, 1 hive-body and 4 extracting supers, including nailing and painting; also 10 brood-frames and 40 extracting frames, including wiring and nailing.
3. Full sheets of foundation for each frame, including imbedding.
4. Labor of the bees in built combs, estimated and credited to the producing colony and yard.

All of the above constituting stack investment, to be depreciated into cost of production and returned to the producer out of the profit at a rate of 10 per cent per annum, in addition to repairs and upkeep, so that at the end of ten years the original investment is refunded and the stack paid for.

General Plant Investment will include:

1. Honey house.
2. Extractors, tanks and other necessary equipment.
3. Winter cases and miscellaneous investment.
4. Trucks.

These, together, constituting general plant investment, to be depreciated into cost of production as follows:

5 per cent per annum on honey house, if frame; or 3 per cent if brick, or 2 per cent if reinforced construction, as allowed by government regulations.

10 per cent per annum on all other equipment, except trucks.

25 per cent on trucks.

The whole of this depreciation, in addition to general repairs and upkeep, being apportioned among the home yard and various outyards on the basis of number of producing colonies, spring count.

### COST OF PRODUCTION

In arriving at production cost, I would consider my fiscal year as beginning November 1, preceding the production season and ending October 31 of the production season. I would treat and consider each yard or outyard as a producing unit, and not the individual colony, although individual colony records should be kept. The cost to be based on the entire year's output from the yard in 60-lb. cans or larger wholesale receptacles turned over to the warehouse and the commercial business for distribution, regardless of the quality of the honey, and the production cost account, when made up, would look about like this:

**Production Cost Account—Home**
Debits

1. To inventory all honey in hives Nov. 1 preceding production season and stores set aside for spring feed at cost --------$——
2. To purchase cost of sugar and honey fed as shown by cash and check records --------——
3. To pay roll, hired help -----——
4. To taxes and insurance-----——
5. To 60-lb. cans and other storage receptacles -----------——
6. To miscellaneous repairs and upkeep of hive stack, etc.--——
7. Labor of proprietor when performing manual labor of production, figured at cost of hired help ---------------——
8. Rent of apiary yard site, whether hired or owned ----——
9. Cost of requeening—
   (a) Purchased queens----——
   (b) Produced queens, for the sake of uniformity producing yard to have credit for $1 each, for queens produced and used ------——
10. To depreciation reserve for refunding stack investment, 10 per cent per annum ----——
11. To pro rate portion of depreciation reserve for refunding central plant investment, as above ----------------——
12. To superintendance ------——
13. To share of executive administrative expense (if desired) ------------------——

——

Total cost of production ----$——

Credits

1. By new brood-combs built during season, charged to investment ----------------$——
2. By new extracting combs produced during season, charged to investment ------------——
3. By new queens produced and used either in investments for increase or to requeen other yards ---------------------——
4. By new swarms hived and used, either in producing yard or outyards (no credit for absconding swarms and queens)——
5. By cappings and scrap wax other than salvage on investment for old combs disposed of ---------------------——
6. By inventory honey on hand in hives or saved for feed Oct. 31 production season --——
7. **Balance net cost of honey crop carried forward to merchandise account, the same as though purchased from any other source --------------——**

The above net cost of production divided by the whole number of pounds of salable extracted honey produced in the yard and delivered to the warehouse ready for distribution gives net average cost of production, which should be recorded by the hundred pounds.

It will be observed that no attempt

No. 3.—Apiary house of F. Zelenik, in Carniola.

is made in the above plans to cover complete accounting for a honey business, but, as the title indicates, only cost of honey production is considered.

In all general factory accounting the factory or production accounts are always treated independently of the many requirements of a general commercial business, and the output of the factory is turned over to the selling organization at cost. In the production and distribution of honey, the home yard, with its central production plant and the outyards, take the place of the factory, and in the foregoing plans it has been my aim to show the cost per one hundred pounds of honey produced in any given yard in receptacles ready for wholesale distribution. It is true that honey may be produced and laid in the warehouse at a very satisfactory cost, and poor management, poor judgment or other adverse business conditions in selling and distributing may result in heavy losses.

### Cost Sold, or Market Cost

Before profit or loss can be declared the general accounting covering the distribution and general business must be considered, and this will take in besides cost of production given above.

1. Executive and administrative salary and expense.
2. Traveling salesmen's salary and expense.
3. Advertising and general publicity expense, either treated as investment and written off over a period of years, or as direct charge against current business.
4. General office and warehouse expense, transportation, etc.
5. All other miscellaneous expense.

Furthermore, no man engaged in honey business would be justified in reporting as profit for the purpose of income tax his entire profits in his very best year, because as a practical honey man he has operated under conditions which he knows may not occur again for years. Hence, in addition to his actual business expenditures, adequate provisions in the shape of reserves must be built up from profits to care for such things.

7. Reserve for meeting excessive winter losses, possibly 10 per cent on swarm investment.
8. Reserve for meeting epidemic disease losses, possibly 5 per cent on swarm, frames and comb investments.
9. Reserve to meet loss from crop failure, possibly 10 per cent on production cost. But as none of these has anything to do with cost of production, they should be treated rather as a matter of judgment in connection with complete accounting. Such reserves should be reasonable and just, based on your local conditions, the object being not to fool yourself into thinking you have made a great deal of money in some favorable year. All that will be permitted in income tax accounting is your **actual** loss, regardless of the amount of reserves.

Michigan.

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## THE SEASON OF 1920

By F. Dundas Todd

Our weather man in Victoria has explained it all away, in fact has proved himself almost as great an adept as was the famous W. H. Gladstone, who was supposed to be able to explain anything away, even the existence of Garibaldi's wife. He showed us how, two years ago, Jupiter Pluvius must have gone mighty wet when so many folks were going dry, and had wandered greatly from his orthodox habits, pouring out rain continuously where it was not needed or wanted, and forgetting altogether vast areas all over the world where everything was burning up under the fierce rays of an unshaded sun. However, he gave us a lot of consolation by informing us that the great air currents were apparently returning to their orthodox paths, and he thought the worst was over. Furthermore, he felt bold enough to prophesy a mild winter for us on Vancouver Island, and we certainly are enjoying balmy breezes in November, a great improvement over what we had in September and October, when we had chilly winds and continuous rain.

April, May and June were, with us, cold and wet, but beekeepers did not worry much about that, as generally speaking such a condition means a good honey crop in July, for the ground holds the moisture in the dry summer months and puts the nectar in the alsike clover and fireweed, especially the latter. But July and August were dreadfully dry, and we had for the second season missed our heavy June rains at the end of the month, so the result is that the honey crop in the wet belt of British Columbia is probably the poorest in many years.

My own crop was worse than nothing. I did not have enough on hand for safe winter stores, so I made careful inventory and found I had 1,250 pounds of honey on hand for 38 colonies, an average of 33 pounds to the hive. At one time I would have thought this an ample amount; in those days I figured on stores for winter only, and knew that about 20 pounds was ample between the first of September and the middle of March. Wiser grown, I now want stores sufficient for winter and spring, especially spring; so now, on September first, I like to see at least 50 pounds in the hive, 20 to winter on and 30 to spring on, and that is not too much.

So I divided 1,250 pounds by 50 and found the answer to be 25, the number of colonies I could carry through the winter and spring with efficiency. Then I did something I have never done before. I marked for extinction a dozen colonies, divided their stores and brood among the favored ones as needed, and then smothered them with sulphur. I have 26 colonies, all of good Italian stock, the queens being nearly all of this season's raising. I have bodies and combs complete for nearly as many more, so I am not worrying any, as with an ordinary spring I can double my forces easily and have them all in shape for the July flow.

I am glad to say that I am not out of pocket on the season's work, for I sold everything in my yard that was odd size—that is not Dadant-Jumbo hives—made many betterments, and have a fair balance in my favor.

### Making Inventory

As usual, following good old Dr. Miller's custom, I made inventory in the end of April of the brood and stores on hand, then arranged the figures under various groupings to see what I could learn from them. To outward appearances every hive in the yard, excepting one, was Dadant style, but only thirteen were so in fact. The previous season had been a poor one, with the result that 24 colonies had plenty of brood in the brood-chamber, but no stores to speak of, so I had to leave the necessary honey in shallow frames above. Quite naturally the bees formed their winter nest on these, so in April all the brood was on shallow combs. When, therefore, I took stock I had

No. 4.—Bee-house of a depot agent in Carniola.

to express all the brood areas in terms of shallow frames, so as to get a comparison. On finishing my tabulations I got the following average figures:

| | Sept. Honey lbs. | April Honey lbs. | April Brood frames |
|---|---|---|---|
| Jumbo frames | 47 | 8 | 5½ |
| Shallow frames | 41 | 11 | 4¾ |
| Whole yard | 43 | 10 | 5 |

When examining the brood I was particularly struck with one feature of the brood nest in the Jumbo frames, the tendency of the queen to confine her laying to a few frames, rather than to try to attain the globular form of a broodnest, which is theoretically correct. As the season advanced I watched this condition closely, and found that she added one frame at a time, laying right from top bar to bottom bar, and from end bar to end bar. My visitors enthused over these magnificent frames of brood, and I secretly felt very proud of them.

It will be noticed that the bees in the Jumbo frames had the advantage in brood area by 16 per cent; as a matter of fact the gain is even more, as I considered a patch as big as a dollar, a frame of brood when taking stock of the shallow frames, while in the case of the Jumbo frames I would call a solid frame of brood the equal of two shallows. As I have already pointed out, the plan of laying in the two styles of frames was quite different. But on the large frames the bees had consumed on an average 39 pounds of honey as compared with 30 pounds consumed by the bees on shallow combs. This is quite interesting to me, because for several years, ever since I read Henri Fabre's famous insect books, I have been wondering how much honey is needed for the making of a bee. I have made no attempt to find out by experiment; such a thing is impossible for a wanderer, but such facts as have come under my notice suggest that a larva consumes about four times her finished weight in honey, and probably much more than that in pollen. I notice a recent writer says a frame of honey will make a frame of bees, so he apparently agrees with my estimate; hence,if we are nearly correct, this conclusion follows: there must be provided in the hive one pound of honey for every thousand eggs the queen lays.

Let me argue this matter out. I learned years ago that my bees in Victoria consumed an average of 18 pounds between the middle of September and the middle of March. Last year my hives were all prepared for winter by the first of September, while my first examination was made at the end of April, a period of seven months intervening. The sustenance consumption would be about 21 pounds for that period; therefore, in the hives with Jumbo frames about 18 pounds were consumed in April to feed the equivalent of five and a half shallow frames of brood, while in the shallow brood-chambers seven pounds were needed to feed four and three-quarter frames of brood. The utmost limit of brood in shallow frames is 4,000 larvæ, so the figures indicate that the minimum consumption is half a pound, the maximum, one pound, for every thousand eggs laid by the queen.

I know I am theorizing from very inexact data, but I am simply making a start on this very important phase of practical beekeeping, and will in the future be more careful in my observations. But my guess, call it such if you like, is confirmed by one beekeeper, who found 42 pounds of sealed honey in the supers at the end of the maple flow, which all vanished in fourteen days of dearth that followed. It was a powerful colony, and we may assume the queen to be laying at least 3,000 eggs a day. Three pounds a day consumed, three thousand eggs laid, consequently one pound of honey for each thousand eggs, provided, of course, the bees could gather enough nectar to sustain their own life.

If my memory serves me correctly Arthur C. Miller is responsible for the statement that our conception of the bees dancing attendance upon the queen for sheer love of her personality is a mistake, that the workers feed her only when they are handling honey. In all bee literature no statement referring to practical beekeeping ever impressed me so strongly as did this one, for it opens up a tremendous vista, and puts out of court a vast amount of matter that has been written about spring feeding and stimulation. With insufficient stores in the hive in April I would have to feed one pound of honey per day to each hive for several weeks to get the queen to lay a thousand eggs, for we have no nectar coming in for quite a long time after the bees are flying freely. I am perfectly aware that in the east the gap is much shorter, that the season rushes from winter to spring.

To feed a pound of honey a day means wearing out the old bees at a time when we want to conserve them until their successors are in the hive, while stimulative feeding—that is a small quantity—simply starts the ball a-rolling, and is worthless unless there is honey in the hive to back it up. Handling honey, the bees feed the queen, she consequently begins to lay, then the bees must feed sealed honey to the larvæ, and in doing so they handle more honey, so she is fed more and lays more eggs. It reminds one of the old nursery story of what happened when the fire began to burn the stick, the stick began to beat the dog, and so on. But the advent of pollen generally starts egg-laying, then with plenty of honey in the hive the seasonal development goes on apace. The bee inspectors of British Columbia have, bit by bit, advanced the minimum amount of honey to be left in the hive at the end of August, until now it is at least 50 pounds, and they hold that 60 is better, much better.

One of these bee inspectors tells a rather good joke on himself. In the fall of 1919, when he was extracting, he got the chance to go on a hunting trip for three weeks, and jumped at the offer. He had in sight fully 900 pounds to extract, but he would get it in the spring, so it was all right. In May he started to get the honey, but found only forty pounds possible, the rest had been turned into bees, and such colonies he had never seen. For a while he cursed his luck, as he had needed the money, but at the end of the month he had available

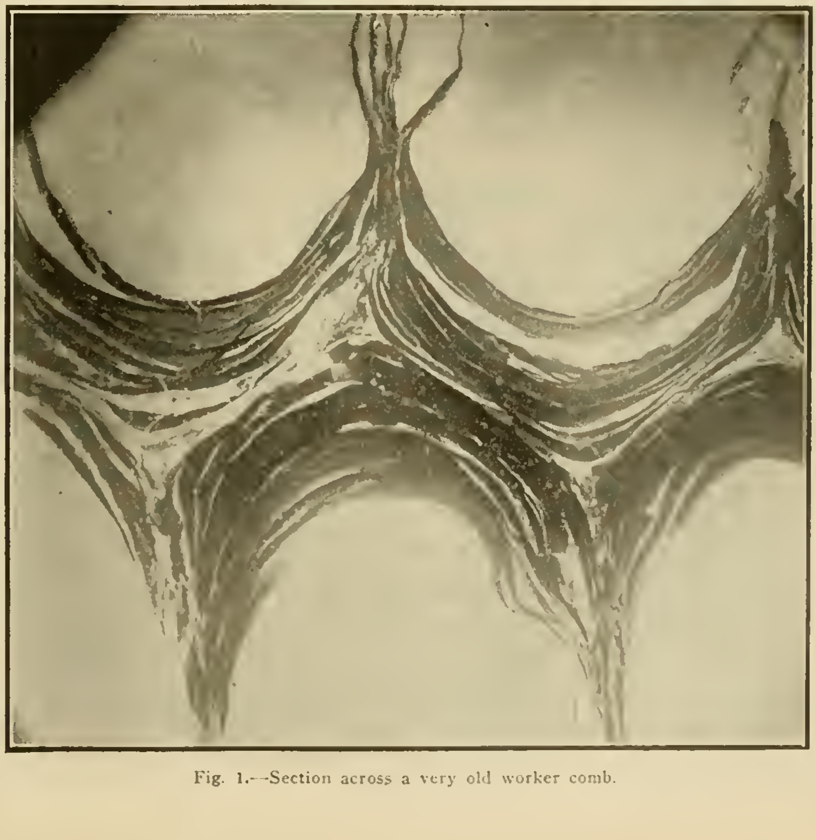


Fig. 1.—Section across a very old worker comb.

half a ton of fine crab apple and dandelion honey, something he had never seen before. He was thus ahead of the game by rousing colonies early in the season.

Further comments on my spring stock will come later.

Victoria, B. C.

## OLD COMBS

By Dr. Brunnich

When a big bumblebee, awakened by the smiles of the vernal sun, flies about from morning till night, seeking honey, and when it then builds its rough little home in any corner, without the help of comrades, it certainly does not imagine that in autumn that building will be empty, a prey to mice and other vermin. Next year its daughter does the same, and so it has gone, for centuries, and will probably go on for thousands of years to come.

Quite another thing it is with its cousin, the honeybee. While the bumblebee's nest resembles the tent of the wandering human nomad, the dwelling of bees may be compared to the proud palaces of the civilized world. Such a palace does not harbor a few generations only; oh no! Perhaps a hundred or more generations may come and go, before the glorious building, whose walls once glittered like gold, harbors the last descendants of its first mother queen. But now the walls are dark, though sound as the first day. This glorious "Ilion" will fall to pieces only after the prudent little inhabitants have been stricken by a catastrophe, whether their mother died without leaving a successor or black hunger killed them at the end of winter. And then inexorable fate will destroy the home as well as the people, the bee palace's combs change to dust, devoured, not by the tooth of time, but by the greedy jaws of the waxmoth worm, which finds in the old mansion a paradise for its development.

We are told that, with time, the walls of the little bee cabins become thicker and thicker, and that the bees reared in them become smaller and smaller, till they are scarcely larger than flies; so thick, in fact, that it becomes impossible for bees to be reared in them.

To me, this thickening of the cell-walls always seemed a cruel thing, and not very wise, from Mother Nature. Therefore I wished to examine the matter closely. I secured some very old combs from a bee-skep, a straw basket of the kind that have now become very rare. If we hold such a comb, of 5 or more years, against the light, we will see that the bottoms of the cells are of a shiny brown color, while they are so thick that the light cannot penetrate through. If we cut through the comb with a hot knife, we find that the cell bottoms are very thick, while the side walls do not differ much from those of young cells. Therefore the diameter of the cells has diminished but little, and by lengthening the depth of the cells, the bees restore their depth. Already, Reidenbach, by filling new and old cells with water and measuring the contents exactly, has found that there was practically no difference.

By putting the pieces of combs for some hours in benzine, which dissolves the wax, it is easy to tear from the cells one layer after another of the coating of those cells. We find that, at the bottom, the layers are thick, while the sides are exceedingly fine. I found that about 18 layers of the bottom measured one millimeter, while the thickness of the sides is about 1-500th of a millimeter. In figure 2, I have reproduced sections through a nearly new worker comb, through an older one and through a drone comb. In a rather intricate manner, I succeeded in making thin microscopic sections across combs, which I have reproduced photographically. Fig. 1 shows a very old worker comb. Fig. 1 especially demonstrates nicely the different layers. The black in the middle represents the wax which, by the preparation, has been dissolved. The different little sacks, which, after soaking in benzine, may be extracted, are nothing but the fine skins which the larvæ have left in the cells when emerging. The dark mass on the bottom is the excrement of the nymphs.

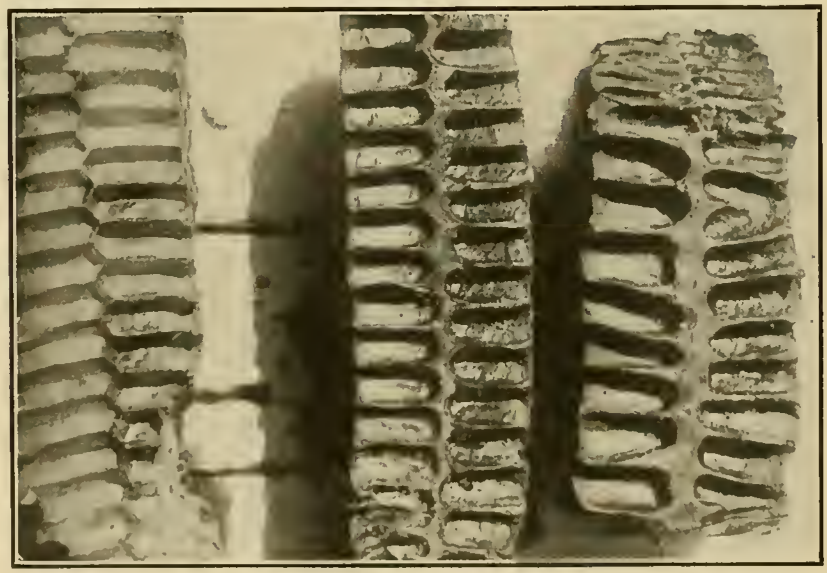


Fig. 2. Section through a new worker comb, through an old worker comb, and through an old drone comb.

When I separated some of the layers without the use of benzine, by simply soaking the combs in water, taking care not to remove any part of the wax cells, and dissolved these in benzine, I secured small quantities of wax. This proves that the bees coat the inside of the cell with a very thin layer of wax, after the young bee has left it. They do like our women when they rub a parquet or parlor floor with wax. Careful and proper as our bees are, they thus cover the above mentioned shells and excrements with wax, that these may not offend the fine nose of the queen, who thoroughly inspects every cell before laying an egg in it. So we see that the bottom of an old cell is composed of the following layers:

First, the primary wax skeleton of the new comb, when built; next, a layer of skin and excrements; then a thin wax skin, then excrements, etc. We then understand why we obtain less wax by melting, from an old comb than from a new one, because, in the first, there are, besides the excrements, the skins of the larvæ which have dwelled in the cells.

The danger of old combs becoming smaller with age is not so great as many beekeepers imagine. It is, however, different with drone cells. There we find that the side wall soon becomes considerably thicker and every versed beeman knows that the size of drones may differ considerably. For that reason, I renew, by cutting down, the drone combs in my hives each spring, to obtain large drones. If I did not, I would soon have in my hives drones of a miserable size, which would not guarantee a strong progeny for my queens. In hives which are expected to serve as purveyors of drones, for a mating station, I advise the cutting out, in early spring, of all the drone combs, allowing the bees to rebuild them and thus securing giant drones.

Switzerland.

## THE NEW BEE PARASITE

Our readers will remember that in December, page 408, and in January, page 24, we gave quotations from our English correspondents, showing that a new cause of the bee disease was discovered at Aberdeen, in the shape of a very small mite which invades some of the breathing tubes of the bee and is thought to be the cause of Isle-of-Wight disease, since specimens of this mite have been found in every colony suffering from the disease. It is also known that the Isle-of-Wight disease was first thought to be due to the Nosema. But later investigation showed that the one had nothing to do with the other

We are interested, in this country, regarding this malady, because it so closely resembles what is generally called bee paralysis, the disappearing disease, or May disease. Whether this Tarsonemus has anything to do with our troubles, on this side of the ocean, will certainly be ascertained before long by our scientists. Meanwhile it is well to understand fully what the Tarsonemus is. We therefore insert below a very interesting letter from Dr. John Anderson, of the North of Scotland College, who kindly sent us two articles concerning this matter, the gist of which had already been inserted on page 24, coming to us from Mr. A. H. E. Wood, one of the parties to the discovery.—Editor.

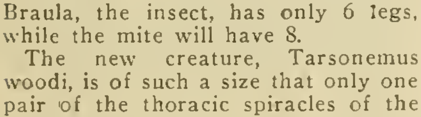
"So far as I can learn, there is no doubt whatever that the Aberdeen workers have discovered a new parasite of the bee, and they believe that it is the actual cause of what has been called Isle-of-Wight disease.

The new parasite is a mite, a creature with eight legs, classified with spiders, scorpions and creatures like that in the Class Arachnida. The most familiar example of the type is the mite frequently found in cheese. Another type causes the disease known as itch. About half of mankind harbor a type of mite in the skin of the nose. It is called Demodex, and is of no consequence.

Braula caeca, commonly found clinging to the hairs of bees—frequently on the queen—is higher up in the scale, being an insect like the bee itself. But Dr. Rennie showed us, in London, a photo of another mite about the same size as Braula and very like it in appearance, which they have found in much the same situation as Braula. This mite is also new to science, and we shall have to be on the lookout for it. Dr. Rennie thinks it is often mistaken for Braula. We shall be able to distinguish, for Braula, the insect, has only 6 legs, while the mite will have 8.

The new creature, Tarsonemus woodi, is of such a size that only one pair of the thoracic spiracles of the bee can admit it. On this account it is confined to quite a small part of the breathing system of the bee, but that is a rather important part. The workers state that they have been able to produce the special symptoms of Isle-of-Wight disease by blocking these two spiracles with wax. If that be really true, it will not be necessary to assume bloodsucking, injury to the thracheae, production of toxins, as Professor Thomson supposes.

We have no definite information as to how bees become infected, as to whether combs, honey, and so forth, convey the disease. Dr. Rennie says it is very difficult to say when the mite is really dead. Professor Thomson indicates some of the difficulties of the new hypothesis. Either Tarsonemus was always a parasite of the bee, or it was not. If it lived in the bee prior to 1904, why did the bees not "crawl" before that date? If it entered the bee only in 1904, where did it live before that?"



Saharian queen brought from the Sahara. 400 miles south of Oran, Algeria.

## FOLK LORE

By E. G. LeStourgeon

In reference to your editorial concerning prayer for the stopping of swarms and in particular to the suggestion that the red clover corolla is made too deep for the honeybee because of its persistence in working on Sunday, would say that it is an interesting coincidence that among the negroes of the South there is a folklore belief that the honeysuckle nectar is inaccessible to the bees for the same reason. The plant is popularly supposed to secrete the greatest amount of nectar for its size, compared to any other plant. It seems that the bees persisted in working upon it on the Sabbath even after the matter had been called to their attention and as they persisted in doing so, the anger of the Lord deepened it as a punishment to the bees.

## BEES OF AFRICA. NO. 2

By Ph. J. Baldensperger

Thousands of years ago, says Plato, there existed a country known as "Atlantis." The Egyptian priest related the story. Modern writers have denied or affirmed the possible existence, in former times, of a continent between Africa and America, some traces of which still linger in the Canary Islands, the Azores, etc. Others hold that the Sahara is really that legendary country. In this case, the Saharian bee may be a relic of that sunken continent, and the Cyprian bee may have been brought by early settlers from Atlantis. The Saharian yellow bee is found all along the Saharian borders, where a few honey plants still linger, honey plants all more or less armed with formidable thorns (as in Texas.—Editor), to defend themselves against camels, giraffes, gazelles and other herbivorous animals.

On account of so many difficulties, the poor Berbers, as thorny and fleshless as the plants, are excusable for refusing to sell the few hives which they possess. I visited many oases and, fearing to come home without bees, I put all of the little remnant of Oriental wit which I still possess to contribution. I called upon caids and leaders and spoke to them about peace and war—to begin with questions which interested them more than the bees for which I had come. A Moroccan Mograbin, in his beautiful red and blue mantel, led me to a venerable caid, who took me in and showed me the "medaille militaire" which he had received from the French Government for his services during the war. It looked very imposing on his white "burnous"—the long mantel which the North Africans invariably wear. Having invited me to a cup of tea, made in a Russian samovar, we sat on sumptuous cushions and carpets, and talked about interesting subjects while sipping finely prepared tea. Caid Bushta was sorry he could not help me to a swarm of bees, but assured me that with patience and roaming about the black mountains in the distance, I could get some. Perhaps I might have gone some other time, but I had no time to lose, and one of the French commanding officers warned me not to go so far: "Il y a toujours des individus qu'on ne connait pas. N'y allez pas." (There are always some people whom you do not know. Do not go.)

However, I played what I thought to be my last card, when I went as far as the entrance of the wild gorges or mountain passes of the Great Atlas. I had read somewhere that very rudimentary engravings representing animals were found on the pink-colored rocks of the Algerian-Moroccan frontier. With some difficulty, for I had no guide that day, I found rocks with inscriptions, not over a few centuries old, principally names of conquerors, and neglecting to give dates. But on two immense blocks, an ancient sculptor had engraved two strange figures. One represented an elephant with a tusk as big as its legs (the sculptor was evidently no Rodin.) The trunk appeared to be raised to gather leaves from some lofty tree. But here is where a beekeeper's imagination may work. The other engraving showed also some shape of an elephant without a head, but with two Greek skeps on its back, and a warrior near him, apparently ready to shoot any supposed enemy, in defending his booty. We know that elephants existed in north Africa, in Carthagenian days, and when Hannibal went over to Spain he had elephants with him.

Back again to civilization, and traveling on the train, I was told by an Arab employe that he knew of a man by the name of Abdel Wahah, who owned bees. I left the train at that station, Sitti Sahrya Safra, and went to this man at once. I greeted him, calling him by name. He was astonished, and when I told him that I wanted to see his bees he was still more astonished. He sent a man with me to look at the bees, but he refused to let me have any. I stopped a moment, reflecting. Then I walked up to him and said: "Give me your hand." Then I recited the first chapter of the Coran, which he recited after me, and when we said Amen, he called out: "Sahh! You are a good man and you shall have the bees."

Without losing any time, I took my box and went to his walled-in apiary. I opened the end of one hive, smoked the bees and cut out four combs, which I fastened into small frames, brushed the box full of bees and then looked for the queen. Wahah put in his hand, drew out a handful of bees and shook them into my box: "The Sultana is in," he said, "you may shut your box." "No," I said, "I must see her first." When I finally found her, I took her by the wings and said "Here is the Sultana," and dropped her in the box. My work was accomplished, and I went to the train with my trophy. Eight days later I was back in Nice.

Now let me tell of the experience which I had of their well-developed scent organ:

I was taking honey from a small apiary, in Nice, about a mile distant from the place where I keep the Saharian and Tellian bees which I brought home. I was telling a friend about the new yellow bee which I brought over the Mediterranean and explained that she was the first one, in our day, which crossed that sea, though her far-away ancestors may have crossed the same sea, 2,000 or more years ago. While I was talking, a Saharian bee came and settled upon my finger smeared with honey. "There she is," said I. "A beauty," said my friend. Presently a dozen or more were about us, while not a single one of the Tellians appeared—a proof that the Saharian is endowed with more powerful olfactory organs and that she has long been accustomed to fly great distances for honey. Nice, of course, has nothing in common with the Sahara oases, yet, in spite of numerous gardens, and wide-spread flower cultivation, the bee readily smells the stronger odor of the honey fresh from the hive.

I almost forgot to tell you that the Tellian or Algerian bees which I brought also, are due to the kindness of the amiable Mr. Bernard, of Algiers.

Since you are fond of "local color," let me tell you of a little incident on my way from Morocco, on the train, before reaching Tlemcen. I met a venerable sheik, who turned out to be a beekeeper. We talked about honey, bees, etc. He said: "Bees, like all well-managed nations, have a Sultan." "You are joking," said another traveler, "bees have no Sultan." The sheik straightened up, as if his body was unfolding itself, and replied: "Attend to your own affairs and listen. You are ignorant and should listen to wisdom. This Christian and I (pointing to me) are wise. We know that every being has a Sultan. I have one. He is here (showing his heart), it is only the dead who have no Sultan." "Pardon me," said I, "perhaps this man is a republican and does not recognize any Sultan." "No, he is simply ignorant," replied the sheik.

Incidents like this were quite entertaining. But, as a rule, I like the Arabs and their philosophy. The French work in Algeria is immense. The Americans might have gone faster, but with an ancient nation like that of North Africa, one of the old countries succeeds perhaps better than a young nation like yours.

Now, I am studying the manners and habits of the Sahara Sultana, as well as of the Tellian Sultana. La Saharian and la Tellian are gathering pollen and honey, just as if they had always been citizens of Nice. More about them by and by.

## I

## AN APIARIAN ROMANCE

### How Helen and Jim Beat Low-Priced Honey

By Amos Burhans

PA JONES reached over for the honey, in which he intended to smother another of Ma Jones' famous buckwheat cakes. In spite of the fact that he had kept bees twenty-five years and was possessor of over one hundred colonies, he never became tired of honey or the cakes that gave him an excuse to eat it.

"Land sakes," exclaimed Ma, as she put another big, brown seven-inch cake onto the stack between Pa and the Hired Man. "Land sakes, but you do love honey. It appears to me that you eat more honey now than you did twenty years ago, when you liked it."

"Yes," agreed Pa Jones, "Honey is one of the two sweetest things in the world—and you're the other. I like you both."

"Now you hush," chided Ma, a bit of color rushing to her cheeks. "Don't start up on that again."

Pa winked at the Hired Man. Ma Jones went over to the stove where the soapstone griddle was gently putting a delicious brown on the left hand side of another cake. She inspected the cake critically and then her eyes happened to stray out the east kitchen window which gave onto the south side of the orchard, where the bees had long since been quartered. This window also faced the road from town.

A horse-drawn semi-bespattered vehicle that looked like a cross between a flivver and a family surrey approached the farm. Ma Jones thought that she recognized the team of sorrels.

Wearing the French "Medaille Militaire." Note the Russian samovar for tea.

"Why, there's the sorrels from Harry Johnson's livery," cried Ma, as she made certain of her suspicions. "I wonder if Jim got home on the early train this morning. He's always surprising folks."

The short course at the Agricultural College was over and they were expecting their only son, Jim, though no word had come from him to warn them of his arrival. Jim had gone to take the short course in beekeeping and some other work he felt the need of since he had stuck to the farm so closely, following his graduation from high school.

The sorrels came to a halt. Ma's eyes, now close to the window pane, followed every move. A man climbed down from the rig, cap pulled down, collar turned up. He helped a well-dressed girl from the rear seat of the shay. Following her there also appeared bags, suit cases, and a spry young man who snatched them all up and started for the Jones home. Behind him stepped the girl, smoothing out her apparel as she walked.

"Well, for land sakes," ejaculated Ma Jones. She threw open the side door and hurried out on the porch. "Pa," she called, "i's Jim and there's a girl with him."

And almost before she finished, Jim tossed the hand bags on the porch, kissed his mother, and said proudly, "Mother, this is my wife, Helen. We were married day before yesterday."

"Well, for the land sakes." Ma Jones, when taken aback, always relied on her old verbal standby. At the first glance the feminine understanding that defies description, passed between them. Ma Jones swept the bride into her arms, putting a resounding period to this chapter in the form of a great motherly kiss.

## II

"Jim has a lot of nerve for a young fellow," observed Pa to the Hired Man. Ma had gone to install her new daughter in the spare room and put on a clean apron.

"With cheap honey in sight, now that the war is over," he continued, "it'll take some hustling to maintain a wife, I'd say."

"I think I'll stick to the corn plow and the seeders and let Jim monkey with the bees," the Hired Man knowingly answered.

Now a regular novelist would put in a fine lot of trimmings right here, but I haven't the time, and don't know how. All I'm going to say is that Pa Jones didn't have the old-time pep to get down to work in the apiary. He left the spring overhauling of the colonies and hives to Jim and his bride, a bride he opined that coming from an advertising agency in the city, even though she shared Jim's bee fever, would not be of much account as a wife to an apiculturist who had no better outlook than 10-cent honey. But then, thought Pa, remembering how rosy the whole world looked when he grafted unto himself a wife, Jim was young and probably felt the same way. Jim would get it all knocked out of him in a season or two and settle down to working the old farm and forget the bees and orchard and small fruits he was so enthusiastic about.

Ma Jones, however, declared Helen a smart girl. She helped her new daughter fix up a suit of white cotton for working along with Jim among the bees. Helen's enthusiasm, coupled with Jim's knowledge, which had that spring been reinforced by the work of the short course at the college where he had met her, accomplished wonders in the old apiary.

The honey house was also overhauled and new equipment added. Jim tapped the rural electric power and light line and wired the farm buildings for light, put a new motor in the extracting room, another in the basement where the laundering was done and an electric iron in the kitchen. Pa winced a little, but paid.

"Jim's got new-fangled ideas," said Ma Jones, "and everyone of them fits in with my feelings. It's a wonder we ever kept him here on the farm as long as we have, Pa."

Helen's desk and typewriter in the sitting room gave an appearance of business-like activity to the room in which she kept the records of the apiary and orchard and the farm work.

"Time will tell the whole story," mused Pa Jones. "He grins loudest who smiles last."

### III

"Dad, I want $500 more capital to put into the business," declared Jim, one evening, when he and his father were alone. Ma Jones and Helen had flivvered to town for the last number of the season's entertainment course. "I need a couple of dozen Modified Dadant hives, more supers, and I want to buy Charlie Waite's twenty colonies and Mellberg's bees, too, and clean them up. Then we'll control everything within our range. They'll pay for themselves this season. Our queens then will be purely mated. We've got to re-queen every year or two and it'll be a big expense to buy. We'll breed them ourselves, now that I've got some good breeding queens."

"Don't forget, young man, that I sold the crop last winter for 15 cents and was glad to get it. Five hundred dollars is a lot of money! Look at these times."

"That's just what I'm doing," Jim replied, earnestly. "I'm looking the times square in the eye, and that's why I want to go ahead. With Helen's new marketing plan, we are done with 15-cent honey."

That was a new one on Pa. "What's the plan?" he asked.

"I must not give it away now," Jim answered.

"Going to hook me with the mystery, eh?"

"No, only going to convince you this fall that it works. If I had thought that 15-cent or 10-cent honey was all there was left for us after a hard season's work, I'd never have gone into honey production. We have the foundation for a big, profitable business and we are going to make it go. Getting away and finding out how the business honey producers solve their problems has given Helen and me an idea. We are going to try to get two or three times what you got for the honey crop last winter, but it will pay to try. We have always made a fair honey crop when you had time to build the colonies up in the spring. Our range is one of the best. Plenty of maple, basswood, white clover, wild raspberries and generally a good fall flow."

"That'll be more for a pound of honey than a bushel of corn's worth now. Are you sure you can do it?" Pa was skeptical.

"Be patient and see. That's all we ask." And in seven minutes Jim had persuaded his father to yield on the additional investment. Please notice that I say "persuaded," not convinced.

"I can make $500 do over $600 worth of buying," said Jim. "We are members of the State Association and buy through the Secretary's office and save 20 per cent on supplies."

"You better stretch it all you can," said Pa Jones, as he wrote the check. "It will put off the big bump just 25 per cent further."

### IV

Knowledge and planning and working always perform near-miracles. And it was Jim's idea to be a miracle man. Helen was also determined on making good. In fact, Helen and Jim worked together as efficiently as Pa Jones' best team, Dick and Dolly.

Jim had taken a few of the weaker colonies and what he had purchased, and made increase which he had found a ready market for by notifying the bigger supply manufacturers that he could properly fill their orders. Good management and publicity brought more orders than he could fill. And the income brought more confidence to Pa Jones.

The supers began to pile up high as the honey flow advanced. Jim's work was bringing results that Pa Jones had never before seen. Jim was experiencing the wonderful exaltation of work that counted. The fruition of his plans gave him a splendid feeling of pride. The work in the open with bees and fruit, the time to herself that Helen had always craved, when working at the advertising offices from 8 till 6, was now a reality. Her flower beds brightened up the lawn. Other touches about the old Jones place told the neighbors and passers-by that new life had been put behind the Joneses' home affairs.

Helen and Jim worked during the evening on form letters, preparing mailing lists and advertising plans to sell the now assured honey crop, and were laboring over the marketing, all of which they mysteriously concealed from Pa Jones, who more than once tried to tune up his ear to catch the subdued conversation around Helen's desk. Failing in this he would steal opportune moments to peer over the journals he perused, trying to ravel the mystery by sight, much as a beagle which has lost the scent will cast his eyes about looking for the running rabbit that has craftily thrown him off the track.

One morning as the maples along the border of timberland in the hillside pastures began coloring the landscape with a wealth of reds and yellows, it was discovered that Helen and the flivver had disappeared from the farm.

"That's your city gal for you," Pa declared. "She's tired of the pretty country home and flowers and bees and things that she's been raving about. I been thinking all the time that she's been acting queer. Looks to me as though she's gone back to mother and the movies and town."

"Now you hush yourself," Ma Jones demanded. "Everything happens the worst in your life. I should have disappeared myself, years ago. Thirteen months more and my naturally sweet and sunny disposition will be ruined and I'll be in a sanitarium." Ma delivered herself of this in a manner that convinced the head of the house and its check signer that the better part of valor would be to hush—and lots of it!

Ma Jones telephoned and wrote letters without finding a clew. Pa just looked his part. Jim said nothing and went on with the extracting. "Even at that," he told his mother, "it's the sweetest business in the world."

And so endeth the chapter of the disappearing bride, as much as I hated to write it.

A week passed, as weeks will, if nothing stops it.

The telephone rang and Ma answered. "There's a crate o' glassware—two of 'em here at the freight house. Tell Jim to get 'em, will you please, Mrs. Jones?"

When Jim got this word he trucked into town, then locked up the crates in the honey house.

"There's dirty work going on around here," Pa Jones kidded Ma, when he came in 10 minutes early for dinner. "I ain't going to be surprised if somebody's murdered in the next chapter."

"You better be careful—it may be you," Ma rejoined, a tint of acidity in her throat. "I've been learning things and putting two and two together and—"

She was going to expend a very carefully-thought-out theory that would explain everything, when the west door opened and Helen rushed in, bundle-laden. She had driven in from the west unseen.

Ma Jones bounded to embrace her daughter, her theory generously flying out the window. "Well for the land sakes!" she exclaimed. "Where have you been, honey?"

Pa Jones sheepishly got up and said he was glad to see Helen back, too.

"I didn't think it would take near as long to see all those folks," Helen began, "but once I'd started I knew I might as well finish. Where's Jim?"

"Extracting," announced Ma.

"We'll need all that honey, and more, I think, to fill these orders." Helen opened a package. "Look them over, Pa. There's one from the biggest hotel in Strongville; here's one from the steward of a chain of small hotels in several cities. Look! we get 35 cents a pound. There's another from the superintendent of the dining car service on the H. O. N. & E. Y. Railroad. They ought to use a ton at least. And here's a lot of smaller hotels and restaurants—they don't use so much, but they all help. I'll never rest till all the dining rooms in this part of the country serve Jones' honey. Did the serving dishes for Jones' honey come?"

"And **that's** where you've been?" asked Ma. "Well, for the land sakes! You do beat all, you town girls!"

Jim came in. "I heard you coming up the hill, cut-out wide open." He grinned. "Do these come up to specifications?"

He set a little glass individual honey dish out before them. It was made in the shape of a double bodied hive, with a glass top shaped like an excelsior hive cover. On one side, in raised letters was the inscription: "JONES HONEY, FROM JONES' APIARIES, BEE CITY, IOWA." On the opposide side were the words:

"JONES' HONEY EVERY DAY, ALWAYS DRIVES THE BLUES AWAY."

"That's exactly like the model, isn't it, Jim?" Helen asked. "Folks can't help but ask 'What's that?' and then they'll order it after they find out. On the menu cards these buyers are going to feature Jones' Honey from Jones' Apiaries. And there's a good profit in it for them, too. A pound makes a dozen or more orders, and, at 10 cents or 15 cents each, figure it out for yourself. We furnish the serving dishes, which they use over and over again. I sold it to every place I tried except one, and I'll sell it to him after he sees how it goes. And they all promised not to charge over 15 cents. That will create sales. We furnish it to them in 120 pound case lots."

Jim was proud of Helen. He had a right to be.

Ma Jones called them to dinner and they all sat down. After thanks were returned and the meal well under way, Pa Jones reached over for the honey with which he proceeded to float one of Ma's fritters.

"Better go easy on that," Jim chided. "That's not 10-cent honey, Dad!"

Pa Jones grinned.

So you see everything turned out happily in the end, anyway, didn't it?

Iowa.

## THE PRODUCERS' LEAGUE

By A. F. Bonney

The following, from Printers' Ink, a well-known advertising publication, contains much of interest to honey producers and members of the League:

"Why advertising is needed all the time.

"If people did not move away, and some time die; if new generations did not grow up, if competitors did not compete, if people were not receptive to new ideas, then—and only then—would there be no need for advertising." This was the assertion of Milo C. Richter, of the Harley-Davidson Motor Company, Milwaukee, addressing a convention of Harley-Davidson dealers recently."

I firmly believe that one of the principal duties of the League will be to conduct a campaign of advertising, to promote the sale of honey.

Of course the individual producer may advertise, and does, but as his supply is not constant, his advertising is spasmodic. He uses printers' ink when he has honey, but, his supply exhausted, he is unable to fill the demand already created. This works to his detriment, for after a while people will cease responding to his ads, and he fails to sell when he is supplied.

Most beekeepers who produce fair crops seem to be imbued with an insane desire to get rid of their crop as soon as possible, which is, probably a reflex of the comb-honey days, when we were advised to sell early, for reasons which do not apply now, for extracted honey will keep indefinitely, whether granulated or sterilized to prevent it. I recently saw a reminder of this in a card from a firm that handles large amounts of honey, in which honey producers were urged to sell, in view of the prospective low prices, and hopes of a good crop in 1921. This, I think, was ill advised and uncalled for.

But continuous advertising calls for continuous supply, and as the producer, that is, the average producer, cannot keep up his supply without buying, and is seldom in position to do this profitably, he is soon idle.

While the farmer always gets a quotation on his goods, grain, cream, eggs, and so on, the honey producer is asked: "What will you take?" and having no information as to values, may sell at ruinous prices to see his honey, later on, sold at twice to three times what he got for it.

Now here, I think, is where the League will function. First, by advertising continuously; second, by seeing that there is a steady supply; third, by keeping its members, and through them other honey producers, informed of the price of honey, to buyers in carload lots, to wholesalers and to retailers. When this is done, buyers, bottlers, will cease asking for samples and "lowest price, f. o. b. destination," and quote prices.

If the honey producers of the country were entering a new field, an untried field of co-operation, the problems confronting it were formidable, but honey producers in Texas and Colorado have ventured, and succeeded. The fruit growers in California have done wonders. The demand for raising has been boosted several hundred per cent, and all the dried grapes so far produced have not gone into the home brew.

We delegate our town, county, State and national affairs to our representatives, and we can as well trust our business affairs in the hands of men as much interested in honey as we are. There is more work than glory in what thev do, and less financial returns than either.

Iowa.

Serious loss is likely to result when thin lumber is used for boxing heavy packages.

## REDUCING LOSSES IN SHIPMENT

### The Freight Claim Agent of the Burlington Railroad Tells How

By J. D. Shields

The economic waste represented by the $109,000,000 paid during the year by the railroads of this country, in the settlement of loss and damage claims, is attracting the serious attention of producers and consumers all over the country and is a matter worthy of the most thoughtful and constructive consideration of our best citizens.

These losses are divided into three general classes: First, due to inherent vice. Second, due to unavoidable accidents. Third, due to preventable causes. We may guard against the effects of inherent vice and we may minimize the accidents, but our efforts along these lines are necessarily limited, as the contest is with the forces and laws or nature, which we often find beyond our control. Science and invention are gradually and constantly suggesting new methods for the conservation of food stuffs and our Government officials are actively engaged along these lines with ever increasing good results.

We don't know exactly how these losses are divided as between the leading causes. We know, in a general way, that large quantities of products are lost or destroyed at the source, due to insufficient or improper care and preparation. We do know with reasonable accuracy the extent and nature of losses due to preventable causes, especially those incident to railroad transportation, every instance of which represents a destruction of material that has had some kind of labor expended upon it, and without negligence of one kind or other would have reached its destination, brought its price, served its purpose and thus have enriched the community in general.

The railroad employees realize their own weakness in handling freight and are engaged in a claim prevention campaign aimed at the various claim producing causes, including education and training of employees, correction and adaptability of freight handling methods, accurate billing, correct and legible marking, good packing and suitable containers. The co-operation of the shipping public is, of course, essential to the success of their undertaking.

Good packing and marking and the use of good containers are vital factors in the railroad claim situation and are subjects that are especially pertinent to the shipper. The three go well together. Each is dependent on the other and the lack of one invariably results in a casualty.

The subject of packing is too big for detailed treatment here. It depends upon the nature of the commodity, but has at least one essential feature, which is adequacy. No one knows the packing requirements for perishable or fragile commodities so well as the shippers or producers. Their experience and good judgment must be largely depended upon to prepare shipments for the ordinary shocks of every day railroading.

Correct marking is elementary. Old marks should invariably be erased from second-hand containers. When consignor's name is shown it should be prefixed by the word "from," to distinguish it from the name of consignee. Street and number should be shown whenever possible and markings on packages or tags should be legible and not easily erased, removed or defaced.

The use of suitable containers is one of the largest single factors among the preventable causes of claims and presents probably the broadest field in which the shipper may lend his co-operation in this campaign. Frail containers are chronic claim producers. Sturdy containers are claim preventers. The word "container" is used in a dual sense to include the completed package and the units of which the package is composed; as in the case of a box containing honey in metal friction top cans and a box containing comb honey in frames; boxes and cans are uniformly called "containers." Experience teaches us that honey in frames and honey in cans require different standards of containers to resist the shocks of transportation, and it takes very little imagination to arrive at such a conclusion. The same is true of all other commodities. What is good enough for one is insufficient for others, and while there are specified rules covering standards of containers for specific commodities, the question of what is a good container in the sense that it will amply protect and carry the shipment, is often dependent on the good judgment of the shipper alone. Bags, barrels, crates, cans, boxes, etc., must be adapted to the class of freight they are used to protect and transport, and should be of sufficient strength in every case to preclude the possibility of loss or damage by any cause short of unfair handling.

Economy in material for containers often turns into waste of contents at the expense of all concerned. Good containers mean less claims, better service and satisfied patrons and customers. The most universally used material for containers is wood, and the subject of wooden box construction is susceptible of very careful study. The Forest Products Laboratory of the United States Forest Service at Madison, Wis., has some interesting data on box construction tending to prove the possibility of better boxes at less expense. It is understood that shippers and others interested may secure valuable information on the subject by addressing the laboratory.

It is said that a package of freight properly packed and marked and in a good container, is half way to destination even before it leaves the shipper's possession. Too much emphasis cannot be placed on the three essential factors in the preparation of freight-packing, marking and containers.

With these three at 100 per cent, the railroad employee should be on his mettle to do his part in completing a good job and getting the shipment to destination and into the hands of the consignee in full and in good order. This is the ideal situation we are striving for, and while we may not always hit the mark, it is earnestly hoped that with co-operation between the shipping public and the carriers' employees, and with the exchange of ideas and the general awakening of the claim prevention spirit in everyone, we may come mighty close to our expectations.

Chicago, May 13, 1921.

## UNWISE LAW MAKING

### By Allen Latham

On page 176 of the American Bee Journal we read that Pennsylvania has passed a law making it unlawful, after July 1, 1925, to keep bees in other than hives having movable combs. It may be unwise upon the part of the writer to call such law-making unwise, but such law-making is to my mind foolish, and I am going to state my reasons for my belief.

In the first place, it is human nature to rebel against a "thou shalt not." There are times, to be sure, when a prohibitive legislation is the only cure for an evil. Such a case is that of prohibiting the liquor traffic. Personally I believe that everyone should have the right to sell liquor if he wishes, and that it should hold a place on the shelves of stores like any other commodity. But, unfortunately, there are many people who abuse the use of alcohol, and for the good of all, we are obliged to prohibit.

In the case of keeping bees otherwise than in movable-comb hives, I think some remedy can be found much better than a prohibitive law. I shall discuss this point later.

In the second place, all prohibitive laws fail of being effective unless backed up by penalties and law enforcement. Pennsylvania may pass the law, but what of it? That law will stand on the statutes of Pennsylvania like many laws upon the statutes of Connecticut, dead and forgotten a few years after its enactment. The game is not worth the candle, and the law will die a natural death.

In the third place, what is the good, even if the law could be enforced? It is the hope of those who got the law passed that through its means bee-disease may be brought under control. Let us consider the pros and cons of this for a few minutes. It is true that in the hands of skillful people the modern beehive is a great aid to checking bee disease. A well-kept hive with its straight slabs of combs, each easily taken from the hive, offers a minimum of trouble to a bee inspector, and he goes through the apiary with such hives in a very short time. It would take much longer to go through an apiary of box-hives and reach as satisfactory a conclusion.

Right here comes the trouble. Few beekeepers are skillful. To one who is skillful there are not less than ten or so who are not. How about their movable (?) comb hives? To enlighten those who have not done inspection I will cite a few cases. These cases are not made up, but actually taken from my own experience.

Case No. 1.—This hive was of the eight-frame type. Four of the frames on one side had brood, four on the other had honey. Between the two sets of four was the division-board. Both sides were bound on the so-called division-board and to the hive walls.

Case No. 2.—This hive had the regulation eight frames, but apparently the person who had hived the swarm was nervous, for the frames, mostly of the non-spaced variety, were shoved to one side at one end and unevenly spaced at the other. Combs were built in letter s's, and to the cover of the hive.

Case No. 3.—This hive had all the frames and they were spaced, but not even starters of foundation were used, and so the combs were built in such manner that some of them occupied four frames.

Case No. 4.—This hive had but four frames, and the owner was a just man. He had averaged those four frames so that each part of the hive had its share. Something doing when I pulled off the cover.

Case No. 5.—The owner of this hive either did not have any frames or else forgot to put them in. Not so bad, after all, for when the hive was lifted all the combs were easily reached from beneath.

Case No. 6.—This enlightened owner had a fully equipped hive with full sheets of foundation. The foundation was not properly fastened and hence the combs were a variety of marcel waves, graceful to look upon if you can get them out.

Cases innumerable in which all the combs were so irregular that not one single frame could be removed without starting the honey to leaking.

Nor must we blame ignorant beekeepers for all this trouble. Twice have I seen equipped hives sent, from those who professed to know what was correct, with foundation so improperly put in that the entire foundation was a waste of good beeswax. Only this spring I had occasion to be called by a wealthy woman to stock her hives with package bees. She had six hives ready for the bees. I had to put in about two hours of hard work undoing improper work and doing the work properly. She had hired a professional(?) supply dealer to put full sheets of foundation into her hives. In some, the sheets were not fastened in any manner to the top-bars. In others the sheets were fastened by drips of wax at the ends and in the middle. In some hives the wires were not imbedded at all, while in others they were caught here and there by melted wax. In none of the hives were the wires tight. Had I put the bees into those hives as I found them, there would not have been one hive in which an inspector could have easily removed the frames for inspection.

And Pennsylvania expects that, by forcing her beekeeping farmers to use movable-comb hives, they will attain movable combs.

And, after all, is the box-hive a menace? Is the movable-comb hive not more of a menace? When bees die in a box-hive the hive is usually left to stand unmolested. It may be robbed out, or it may not. Frequently, before it does any harm the wax-worms have put it beyond danger. When, however, bees die in a movable-comb hive the owner will generally pull the hive to pieces. He will either toss the combs about or will lay them helter-skelter on the adjacent stone wall. I put it up to Pennsylvania law-makers whether such a hive is not more dangerous to the beekeeping industry than the unmolested box-hive

Owners of frame-hives are quite likely to get their bees to robbing and, if any disease is present, the disease is spread and the menace increased ten-fold. Owners of box-hives seldom get their bees to robbing, and disease may exist for a long time without becoming dangerous.

I say without fear of any argument that can be brought forward, that the box-hive bugaboo is seen through a microscope. Look at a louse through a microscope and see what a horrible thing it is. As with lice, so with box-hives; keep them off your own premises, but let your neighbor tolerate them if he will.

The trouble in this whole matter lies in the method of procedure. Pennsylvania has gone "Dutch." Prohibitive legislation is not what is needed. Education is what is needed. Teach the value of the frame-hive. Teach how to make use of this value. Teach that unless the frame-hive is treated as a frame-hive its value ceases. Most people can be approached from the money point of view. If the dullest person is shown that he can make more money by this thing than by that, he will adopt the money-making scheme. Let Pennsylvania spend as much money in educational activity as it will have to spend in carrying out its absurd prohibitive laws and the end sought will be achieved much sooner.

I realize that many of my readers will be surprised at the side I have taken in this matter, and because they have set their hearts upon the eradication of the box-hive, will disagree with me decidedly. I am right, however, and the sooner the friends of beekeeping are brought to realize that it is only through education that we shall ever clean this country of bee diseases, the more quickly shall we reach that distant goal.

Connecticut.

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## SMALL AND LARGE HIVES

By V. Dumas

Much has been said upon the above question. But in giving the following personal observations, my aim is to draw the attention of the reader upon a neglected point. I hold that the value of observations reported is not only depending upon the knowledge of the man who made them, but also upon the number, comparison, frequency and generality of those observations.

Not all the methods of appreciation are logical. We see a beginner buy a style of hive; during a few seasons he has no crop; then he changes the style and suddenly he secures an immense crop of honey. Does that prove that the first style used was inferior? He may have had poor seasons at first, with a better honey period later.

Another man buys a large hive and puts a fine swarm in it. While his other colonies harvest a good crop, this one may make barely enough to live. Does this prove anything against the hive? Perhaps it had a poor queen, or she may have been superseded at the wrong time, for such a supersedure at the time of the crop may endanger the result.

Many similar accidents may happen to the novice, and even to the experienced beekeeper, and influence them in their judgment. We must not forget, therefore, that all incidents and observations must accompany our statements, if we wish to give the reader an occasion to pass judgment upon the comparisons.

With this point in mind, I wish to exhibit the conclusions drawn by me from a practice of ten year, bearing upon the annual experience of keeping some 250 colonies in hives of different models and sizes; besides the observations furnished by the transfer of a large number of colonies, from buildings or trees into hives.

My home apiary was composed of 104 colonies divided as follows:

A—70 Dadant-Modified or Dadant-Blatt hives, 12 frames, inside length 16¾ inches, inside height 10⅝ inches.

B—2 Dadant-Modified, Long Idea hives, 28 frames, inside length 16¾ inches, inside height 10⅝ inches.

C—8 small hives, 10 frames, inside length 9½ inches, inside height 14 inches.

D—2 small hives, combs across entrance, 18 frames, inside length 9½ inches, inside height 14 inches.

E—6 Box-hives, 8 combs, inside length 7⅞ inches, inside height 24 inches.

F—16 De Layens Long Idea hives, 18 to 24 frames, inside length 12⅜ inches, inside height 14¾ inches.

These varied styles, though inconvenient side by side, have supplied me with the following evidence:

A is the best hive for extracted honey production. C is the best for wintering weak colonies. E furnishes the greatest number of natural swarms. F has inconveniences which overbalance its good qualities. D offers no advantages whatsoever. B might be advantageous in a large apiary for the rearing of queens, as it would supply, at the beekeeper's choice, either combs of honey or combs of brood.

In France, the shallow frames are not desirable for wintering. I have, however, ascertained that this is the case only with weak colonies. I have also noted, in the Dadant hives, some 30 desertions, in spring, with no other cause than the weakness of the colonies, which were unable to keep warm on ill-supplied large frames. This might have been avoided, for one should not allow colonies to become weak. But I have never seen desertions in the styles C, D and E, however weak the colonies may have been. This is an aside of beekeeping which might be avoided.

It is evident to me that, on the whole, the 12-frame Dadant hive is most desirable. The fault found with it in England is probably the result of a lack of comparative experience. This fault is undoubtedly applicable to the Long-Idea Dadant or DeLayens hives, as there is too much room, and the queen may extend her laying in an undesirable way, when her laying should be reduced. I had one of those hives, supplied with full combs in its entire length, to furnish 14 combs of brood in August; so that when I transferred the bees into an ordinary 12-frame hive, I had to put on a super to contain the immense population of that colony. At that date, not one of my small colonies had swarmed, though well supplied with bees. Their crop averaged only 33 pounds, while most of the large hives yielded an average of 88 pounds. Yet, at the opening of spring these small hives had seemed to be in better shape than the larger ones. Independently of all other causes, the size of the combs and their number have the greatest influence upon the honey production.

I consider those large frame hive colonies as the best balanced, keeping a middle road between the hives that are too small and cannot produce enough bees, and those that are too large and wear themselves out by raising too many bees when they should be filling with honey.

Toulouse, France.

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Arizona had 28,174 colonies of bees in 1919, as against 23,770 in 1909, and the honey crop for 1919 was 926,621 pounds, or a per colony average of 33 pounds.

### THE C. C. MILLER FUND

I have your letter asking my opinion about continuing the time for subscriptions for the Miller Memorial Fund. I am very much in favor of going on with this for some time, and can best explain my reasons for this by telling you what I think should be done with this fund. The amount so far subscribed is inadequate to establish a memorial fitting to a man like Doctor Miller, and I know of few things that can be done for beekeeping that will do more than a real working establishment to perpetuate the memory of this great beekeeper.

What I hope for is this: The first choice would be a fellowship or scholarship for research in beekeeping in some great university, but as we will probably not be able to get funds for that, the second choice would be to found a library of beekeeping literature in some university in which could be gathered together the literature of the world on beekeeping. We have no such library at present in America. Such a library could be founded at first by contributions from authors and editors of practically all the present literature, and the income from the principal would be used every year to buy current books and journals and to buy up complete files of the various journals, reprints of scientific articles on beekeeping and the older books on the subject. Even if not to exceed $100 annually were available, this would in time probably make this the greatest library of the kind in the world, and, of course, the larger the fund the better the library would be. I am in favor of placing the fund with some trust company for investment, so that for all time the money would be working for the betterment of beekeeping, for I know that such a memorial would better please Dr. Miller than a transient thing like a monument. His constant aim was to help his fellow beekeepers, and no memorial which does not do that will fit the character of the man whom we take pleasure in honoring.

The amount of money now at hand is scarcely one-fourth enough for the smallest library, but I feel sure that this amount is not all that you will receive. If the subject can be brought to the attention of the beekeepers at the various associations, large contributions will be forthcoming. Furthermore, I feel certain that there are still many who want to contribute who have merely overlooked it. Those who have profited financially because of the beekeeping work of Doctor Miller are myriad, and there is the still larger group of beekeepers who are better men and women because of the life of the man, and they will want to have a part, even though it be a small one, in this movement.

It will probably help materially if the beekeepers can be assured that, if possible, the fund will be invested in some way which will be a benefit to the beekeeping industry. The committee having this in charge has, up to the present, not been able to announce what would be done, because of the uncertainty of the amount that would be available, and even at this time it is impracticable to make a definite statement. I feel sure, however, that if we can promise that the money will be used in some way that will be a perpetual benefit, many contributions will be increased and later contributions will be much more numerous. I, for one, am anxious for the kind of memorial which I have here outlined, and shall use my influence to this end. I shall be willing to agree to whatever is the most practical, provided that the most useful thing can be decided upon. Of course, I am only one of five on the committee, and am not attempting to dictate the policy, but am merely stating my personal beliefs and preferences in the matter.

Subscriptions to the fund are being requested by foreign bee journals, one as far away as South Africa, and if beekeepers of other lands are anxious to honor the memory of Doctor Miller, then it seems to me that those of us who were nearer to him should do our level best to make this worth while. In view of these circumstances, I look for a considerable increase in the fund soon.

Sincerely yours,
E. F. Phillips.

### SHOULD EVERY FARMER KEEP BEES?

By T. C. Johnson

I read the article on page 234 of the June American Bee Journal, by J. H. Tichenor. I was a farmer myself when I started to keep bees, and I hived my first swarm in a nail keg; but I was not long getting in touch with some one that knew more about bees than I did. I got on the right track and subscribed for a good bee journal and also bought some good bee books. A soap box and a nail keg won't do for me—nothing but a movable-frame hive and combs built from full sheets of comb foundation.

If every farmer would do as I did, or better, I would feel just like Mr. J. H. Tichenor does, I would say yes, every farmer should keep bees. I have helped a lot of my neighbors to get started right and I am not afraid to help others, with the fear that they will put me out of business or flood the market with honey. I have inspected bees in Indiana for over three years and I know that the State is spending thousands of dollars to get rid of disease, and the biggest help to get rid of it is to get rid of the cross-comb hives. I find farmers, every day, who are hiving bees in anything that has a hole in it; all the way from drain tiles to cider barrels. I even saw one farmer trying to hive a swarm in a lard can, but the sides were so smooth that the bees could not stick, which was a good thing. Now if Mr. Tichenor had explained what a farmer should do to keep bees in the right way and what the law requires in that line, I would have said Amen to his article. But unless we get rid of the box hive or old gum, as most farmers call it, we will never get rid of foulbrood. If bees are worth keeping they are worth keeping right. I have met farmers who had everything on the farm that was needed to run it, and a big automobile to go pleasure riding, but their bees were in old boxes with old dirty sections on top with mice, roaches, and most anything else. When told to get new hives, they cannot afford it. It would simply be throwing money away to pay $1 per pound for foundation, when, if used properly, it would make $5 for $1. There are but very few places on the farm where a man can spend $1 and get back $5 in return, saying nothing about the benefit the bees are to his fruit and plants.

Indiana.

### SALT FOR BEES

By Harold L. Kelly

In reference to recent articles appearing in the American Bee Journal in regard to bees liking salt, I would like to cite an experience at my apiary.

A neighbor inquired if bees liked salt, stating that a portion of the garden had been sprinkled with salt to kill weeds, and that the ground was thick with bees.

Upon investigating, I found conditions as stated by my neighbor. The entire garden was still wet from recent rains, but the bees were only on the patch that had been salted.

It was not necessary for them to come to this particular spot for water alone, as there is a stream not three hundred feet from the apiary from which they have always obtained water.

To satisfy myself as to whether they liked salt, I placed in the yard a pan of wet sand in which two handfuls of salt had been sprinkled. It was frequented by the bees until it dried out.

I notice that when getting water at the stream, they work on the wet sands, and not at the water's edge. Is it not possible that they get salts that wash from the earth and settle in the sands, that could not be had if they took water direct from the stream?

Maryland.

### BOILED HONEY FOR CAGES

By D. T. Glaster

Boiling honey to make candy for mailing queens is no bad thing. It should be boiled in a double boiler with but little water, and boiled until all the water is boiled out and until the honey is thick with a heavy body, and then you can get more of it in the candy and the candy will not dry out or get too soft. Otherwise in a damp time it will get soft and stick up the bees, and in a dry time it will get hard and dry and let the bees starve. I have been using boiled honey ever since the postoffice department required it. The first two or three years I had some trouble with it until I boiled it until it becomes thick, and the thicker the better.

North Carolina.

# THE EDITOR'S ANSWERS

**When stamp is enclosed, the editor will answer questions by mail. Since we have far more questions than we can print in the space available, several months sometimes elapse before answers appear.**

### Selling Queens

Suppose I have been rearing queens of fine quality for my own apiary and would like to sell the queens by advertising, what are the requirements of the law which I have to observe in selling and shipping queens?
ILLINOIS.

Answer.—The requirements for this State are that you should have your apiary inspected, to make sure that you have no foulbrood. A. L. Kildow, Putnam, Ill., is the Chief Inspector just now. He will either send a deputy or come himself, and it will cost you nothing.

In addition, if you use honey to make the candy for the shipping cages, you should boil that honey for a half hour, and a certificate to that effect must be put upon the cage containing the bees. This, with a certificate that your apiary has been inspected, will be sufficient, we believe, to enable you to send queens anywhere. Such certificates are printed on address tags for mailing purposes.

### Royal Jelly

I would like to know where royal jelly can be found in a beehive. WISCONSIN.

Answer.—In every cell that has young larvæ or "worms" of the bees less than 3 days old. Buy some text book and read it. You cannot keep bees successfully unless you are posted.

### Honey Vinegar—Sweet Clover

1. Would you please advise me the proportion of honey and water to use, or give me the formula to make vinegar out of honey?

2. I will also be in the market for some annual sweet clover, but think it's too late to plant it this spring, and would like to know if I can plant it in the fall, like you do alfalfa.
MISSOURI.

Answers.—1. About a pound and a half of honey, with enough water to make a gallon of liquid, the honey had best be heated first, to kill all germs. Then add to the liquid a little yeast. Fruit juice is as good as the best yeast. The liquid should be just warm when the ferment is added. Keep the solution at a suitable degree of heat to sustain fermentation, anywhere between 70 and 100 degrees.

Alcohol fermentation takes place first, but if the air is not excluded, the acetic or vinegar fermentation soon sets in. The more air you give, the quicker will be the change.

2. Annual sweet clover has been very high in price, about $1 an ounce. As many people are cultivating it, it will probably be much cheaper next spring. Sow it early, about the time when oats are sowed.

### Races Compared—Requeening

1. Compare the goldens and three-banded Italian and Cyprian bees in regard to resistance to European foulbrood.

2. In Langstroth on the Honeybee, revised by Dadant, is not Dr. Miller quoted as saying he always left requeening to the bees? Is this a fact? KANSAS.

Answers.—1. I do not know for certain, for we have not had any Cyprian bees for years, but I believe either of those three varieties would be equally resistant to European foulbrood. However, it is best to be on the lookout and treat the bees promptly when disease is found.

2. No, but I don't believe Dr. Miller ever practiced requeening, except in cases where the queen was inferior. I have just looked through his "Fifty Years" and cannot find any mention of it. However, it is a good plan to requeen when the queen is fully two years old. Queens of less than a year will lay less drone eggs than older ones.

### Entrance—Foulbrood

1. How wide should the entrance be on a hive when wintering bees in the cellar?

2. Would it be safe to use frames for extracting honey when the frames have been used for the same, but the frames in the brood-chamber have had foulbrood, that is put them on when a good honey flow is on?

3. Would it be a good plan to paint a hive inside, where foulbrood has been?
WISCONSIN.

Answers.—1. Have the entrance as wide as possible. We even raise the hive a little from the bottom-board, so they may have plenty of air.

2. No, don't use any combs, or frames, or hives that have foulbrood. Melt up the combs, scald the frames, singe the hives. You cannot be too careful. Most people boil the frames in lye water for half an hour.

3. It is a good plan to paint the hive inside. But a still better plan is to singe it with a blow torch such as tinners use. If you know of a tinner you may be able to borrow his blow torch If not, buy one.

### Extracting Granulated Honey

Please tell me how to extract granulated honey from super extracting frames. I put my supers back on the hives last fall, after extracting, for the bees to clean and repair; the honey was very thick; it was about impossible to extract it, and the comb was left very ragged. This was after heavy killing frosts, and I thought no more honey could be stored; but I found some of the frames nicely filled, capped and granulated.

I have read somewhere that if a super of granulated honey be put below the brood-chamber that the bees will transfer the honey to super above. If I do this, should I make an opening in super for the bees to go in and out from the alighting board?

I am of the opinion that my best plan is to cut the honey out of frames and extract it over the fire, and rewire and put new foundation in. MONTANA.

Answer.—If the honey is of a soft granulation, the bees will use it whenever they cannot find honey in the fields, but if it is of coarse granulation some of it may be lost in sucking it, as sometimes it gets so hard that they throw it away.

You may put the super below the alighting board, but it would be better to put it just immediately below the brood-chamber and on top of the alighting board. If your honey crop is on, you had best delay this until a time when they will be willing to take the honey, say after a rainy day or two.

Perhaps it will be as economical to heat the honey and melt it as you propose. But honey which has been heated hot enough to melt the comb usually loses some of its quality.

### Increase

I wish to run my bees this season for increase without detriment to honey-storing. Would the following plan be all right:

One frame with queen and nine full sheets of foundation below, queen excluder on, with two supers on and rest of brood on top of all; then, when they are well started below, take off the top brood to another stand and introduce queen. Or, if they raise queen-cells in upper brood-chamber, could cut out to one? I use 10-frame Danzenbaker hives. VIRGINIA.

Answer.—1. I don't believe we can count on making increase *without detriment to honey storing*, unless we make the increase when there is no longer any need of increase in the number of workers, or, in other words, unless the swarm thus made comes when it is too late for the first crop and may be produced in time to secure the winter stores from a second crop. All this depends upon the season and the locality. If you manage to have two colonies, instead of one, for a late crop, you may even harvest more honey, upon the whole, than if you had kept the colony single.

So the thing to do is to figure out, from your locality conditions, at what time the first crop is to end and the second crop to begin, and act accordingly. But, as a rule, increase in colonies decreases the possibilities of honey storage, for we cannot eat our cake and have it left.

### Drone Layer

I have a large colony of bees which shows raised sealed cells in plenty Does this not designate laying worker bees? Am unable to find a queen. The colony is very strong.
WISCONSIN.

Answer.—If those raised sealed cells are laid close together in a regular way, then it may be a young unmated queen that is laying. But if they are irregular, here and there, your surmise is probably correct and there may be a lot of drone-laying workers. At any rate, this colony is worthless until you give it a fertile queen. It will probably weaken down to a small number of bees soon, as there are no worker bees hatching. They get old fast, when spring opens.

### Robbing, Increase, Etc.

1. How can one stop robbing after it has begun in an apiary?

2. Can a queen be introduced successfully on a couple of frames of brood in the top story of a 2-story hive, if the two hive bodies are separated by a queen excluder?

I would like to introduce a queen in this manner and then divide the colony after the top story is filled with brood. I intend to leave the old queen in the bottom story.

3. How does Nebraska compare with other States in honey production? NEBRASKA.

Answers.—1. There are many ways to stop robbing, none is always successful. The best way, if you can find the robbing colony, is to substitute it for the robbed colony, exchanging their locations for one another. You may also put the robbed colony in the cellar for 2 or 3 days. That does not always succeed. If you can notice when robbing begins, you may often be able to stop it by throwing loose grass on the entrance of the robbed colony, so that the robbers have some difficulty in getting through. The bees of the robbed colony station themselves in this grass and grab them as they try to enter. But the very best way is to prevent robbing from beginning by keeping strong colonies and exposing no sweets where bees can be spoiled by getting a chance to rob.

2. I never tried this. It may succeed, but I would much prefer to make the division at the time when the queen is introduced.

3. Nebraska is like most all other States. There are excellent spots and poor ones.

### Queen Rearing

1. I have started in beekeeping with the 10-frame hive and am thinking of changing to the 12-frame size, as a swarm preventative. I have

20 of the 10-frame size and don't think I will ever keep over 50. Now, would you change hives, or would you adopt the Demaree plan for swarm prevention?

2. The Demaree plan, when you unite the 2 hives, is it necessary to put paper between, or will they unite peaceably without it?

3. I am going to raise some queens this summer and had intended to adopt the C. C. Miller plan, but since our State bee specialist tells me that it is better to raise them by the Doolittle plan, and to do it in a queen-right colony, I am undecided. Would like to have your opinion about it. Which do you think would be better, raised in a queen-right, or a queenless colony?, I am not going to raise them for sale, so you see I will only need a few, but want the best that it is possible for me to raise.

4. I have Langstroth on the Honey Bee, revised by Dadant, and Practical Queen Rearing, by Frank C. Pellett.. Langstroth says in transferring larvæ to put in cocoon and larvæ together. Pellett says to transfer with toothpick or grafting tool. What I want to know is, is it necessary to put the cocoon in the artificial cell?

5. In putting in royal jelly, is it all right to put the jelly in on top of larva, or should the cells be put in first and larvæ next?

MISSISSIPPI.

Answers.—1. In order to prevent swarming there are several requirements. So the changing of colonies from 10-frame to 12-frame hives is only a very small part of the needs. You had better use the Demaree system, which will probably fill your needs best, and cost you less since there will be no additional investment.

2. With the Demaree plan, such as given on page 182 of the May number, there is no uniting of two colonies. But if you should divide the two stories and wanted to put the bees together again later, it would be best to use the newspaper system.

3. The Doolittle plan is a little more labor, but it loses less time for the bees. Both plans are good if you see to it that the colony which is rearing queens has brood from the very best queen and is well supplied with honey and bees.

4. The Langstroth way is that given by Pridgen in "Advanced Bee Culture" and quoted; the Pellett way of transferring the larva with a toothpick is nearer to Doolittle's way. Either way is good. One way may please you better than the other.

5. Put the jelly in first and the larva on top. That is the way you will see it in naturally built queen-cells. However, the bees evidently place the jelly on the side of the little grub and the latter glides down upon it.

## ODDS AND ENDS

### Apples and Peaches in the U. S.

A significant report is that of the census covering the apple and peach crop of the United States. Apples produced in 1909 totaled 145 million bushels, as against 156 million bushels in 1919. Peaches produced in 1909 were 35 million bushels, and 51 million bushels in 1919.

The most remarkable part of the report, however, covers the decreases in number of trees of each kind of fruit, there being 115 million apple trees, as compared with 151 million in 1910. Peach trees 65 million, as against 104 million in 1910.

There is as great a contrast in number of trees not of bearing age, there being 36 million apple trees, as against 65 million in 1910. There were also 21 million peach trees not bearing yet in 1919, compared to 42 million in 1910.

If this indicates anything, it indicates that there is not now that feverish desire for heavy orchard planting so apparent ten years ago. Should this reach a point where fruit becomes more scarce, it would tend to mean better markets for honey.

The better methods of handling and caring for trees, however, will mean a relatively larger per tree production, which will, in part, offset the shortage in plantings.

### Short Crop of Maple Sugar and Syrup

Fewer maple trees were tapped last spring than in any one of the last five years, and only about half as much sugar was made as during any of the preceding four years, and about three-fifths as much syrup, owing to the unfavorable weather, says the Bureau of Crop Estimates, United States Department of Agriculture.

The average producer's price of maple sugar in the middle of April was 25.7 cents per pound, compared with 37 cents in the same month in 1920, and 26.9 cents in 1919, although above the 22.5 cents of 1918 and 16.3 cents of 1917. Maple syrup had the average price of $2.21 per gallon in April, above which was the price of $2.92 in 1920 and below which were the prices of the preceding three years.—U. S. Weekly Crop Letter.

### Beekeeping at Colorado Agricultural College

With the coming of vocational men to the Colorado Agricultural College and the increase in price and demand for honey, there came a request to reinstall the course of beekeeping, after a fifteen-year absence from the curriculum. A two-year course in combination with poultry raising, small fruits or gardening is offered, and the general course on beekeeping touches the various phases of organization, anatomy, physiology and activities of honeybees, together with diseases and enemies of bees, management of the apiary and production of honey. The Federal Vocational Board has let a contract amounting to $1,500 for bee equipment, which includes the modern apparatus and 25 colonies of bees.

### Mississippi Bees

Bees in Mississippi have increased from 74,350 colonies in 1909 to 82,770 colonies in 1919. The production for 1919 was 731,630 pounds, or a per colony production of 9 pounds.

### Cleaning Excluders

For several years I have cleaned wood and wire excluders of wax by use of a sharp-pointed knife. It is slow. I brought home a lot of excluders and placed what would go in my wax boiler, with wooden slats below, so excluders did not touch the water; covered them, and with a pail of water in boiler soon had the live steam cleaning them like new in a few moments. It does not damage the wood with a few moments of steam, and cleans them so much better, as well as faster.

N. E. France.

### Wild Honey

"Wild honey is as near like tame as wild bees are like their brothers in the hive. The only difference is that wild honey is flavored with your adventure, which makes it a little more delectable than the domestic article." —(John Burroughs, "An Idyl of the Honeybee.")

### Italy to Have New Customs Tariff

According to a cablegram dated June 13, from the American commercial attache at Rome, the new Italian customs tariff, increasing the import duties, has been approved and will become effective in the near future. Details, however, are not yet obtainable.

### Bees and Honey in California

Bees have decreased in California, there being 201,023 colonies, as against 180,719 colonies in 1909. The honey crop for 1919 was 5,501,738 pounds, or 30 pounds per colony.

### Misbranding, Etc.

There were pending before the Federal Trade Commission, on June 1, 412 complaints of all kinds. These include misbranding, false advertising, etc. The subjects range from oil stock to toilet preparations and razors. Fortunately, none of those mentioned has to do with honey.

### Beekeeping in India

Beekeeping, as an industry, is unknown in the plains of northern India, but nevertheless honey is collected in quantities and sold in the villages of the hill country.

The poor villagers who live in jungles dig out shallow spaces in the mud walls of their huts and whitewash these spaces, later closing up the spaces except for a small entrance through the mud. It is not at all unusual for these spaces soon to be occupied by the wild bees. Nobody ever cares to bring bees to any particular hut or space, provided for them. Apparently it is not necessary, as the bees appear to find them soon.

When the natives wish to gather honey they burn a combination of wood chips and cow dung to drive the bees out of the spaces in the hut walls and remove the whole of the comb. Instead of using a veil for this process, the man keeps covered with a blanket, provided with suitable holes for seeing. The bees are either destroyed entirely or left to shift for themselves, and thus the "goose" is killed for her "golden egg."

In the plains no one ever cares for the bees, although they may often be seen in clusters hanging from the branches of roadside trees and projections of the walls of houses. When shown a catalog of beekeepers' supplies, everyone was surprised to hear that it is possible to keep bees and to make them produce honey on a scale fit to be called an industry.—(Gange Pershad, India). KH.

### More Census Reports

Louisiana had 31,079 colonies of bees in 1919, as against 29,591 in 1909. The honey per colony average for 1919 was approximately 8 pounds, or a total of 247,513 pounds.

In Minnesota the per colony average is 19 pounds, with a total of 1,251,102 pounds from 67,344 colonies. The number of colonies in 1909 was 56,677.

### New Mexico Census Report

New Mexico is reported to have 15,733 colonies of bees, as against 10,052 colonies in 1909. The honey crop for 1919 was 593,290 pounds, or 37 pounds per colony.

### Bulletin on Sweet Clover

Bulletin No. 233 of the University of Illinois Agricultural Experiment Station has for its subject "Sweet Clover for Nitrate Production."

These tests were carried on on different type soils in five different sections of Illinois. Results were very conclusive, showing the very great value of sweet clover as a nitrate producer, it being much superior to heavy manure, which was also tried in the tests.

Characteristics which make sweet clover especially valuable as a green manure crop are:

1. Adaptability to a wide variation of climatic and soil conditions, provided the soil is not too acid and inoculation is provided.
2. Hardiness to cold and drought, and resistance to diseases and weeds.
3. Production of a large tonnage per acre at a time when it can best be used for soil enrichment.
4. Rapid decomposition in green condition.
5. Its deep rooting habit, which enables it to assist in rendering impervious subsoils more porous and to feed at a greater depth.
6. Ability to obtain food from insoluble minerals more readily than any other crop.

### North Carolina and Arkansas Bees

Arkansas has 112,425 colonies of bees, as against 92,731 in 1910. The honey crop for 1919 was 791,598 pounds, or 7 pounds per colony.

In North Carolina bees have decreased from 189,178 colonies in 1910 to 163,956 in 1919. The honey crop for 1919 was 1,341,002 pounds.

### League Notes

By H. B. Parks

The past month has been one of great activity in the League. Prof. H. F. Wilson, Chairman of the Schedule Committee, has been able to make a tentative grouping of the State meetings with reference to dates of meetings. He has divided the States into fourteen divisions, each division of which can be visited by speakers without loss of time or distance in travel. The schedule will be printed when finished.

O. E. Timm, Secretary of the Nebraska Honey Producers' Association, has completed the affiliation of his organization with the League. C. E. Carhart, C. F. Strahan, H. Thaden, H. C. Cook, C. A. Eiker and Thos. Atkins are the moving force in this up-to-the-minute organization.

George W. York, of Spokane, reports that the Washington State Beekeepers' Association, instructed their Secretary, Mr. Starkey, to complete the affiliation of that body with the League. This action is the result of the good work done for the League by Geo. W. York, J. B. Ramage and Dr. A. L. Melander. This association is not large, but it knows the value of organization.

H. L. McMurry, of Madison, Wis., Chairman of the committee to cooperate with the National Horticultural Society in its tree planting campaign, has made arrangements with that body to have nectar-yielding trees planted wherever this is practical. He asks that you send him the names of trees that are of value as honey plants and at the same time are suitable as permanent shade trees. As these trees are to be planted in every State in the Union, a large number of varieties will be used. Send Mr. McMurry the names of the trees suitable for your locality.

Dr. E. F. Phillips reports that some investigations have been made on the subject of the use of honey in candy, and the finding will be published soon.

C. B. Baxter, Chairman of the Equipment Committee, gives the following as his Committeemen and Advisory Board: A. V. Small, C. F. Muth, W. B. Dickenson, M. G. Dadant, C. A. Schirm, K. Hawkins, A. L. Boyden, F. W. Redfield and A. G. Woodman.

Missourians may have to be shown, but when shown they know how to act. The first response to the appeal for individual membership was from the Leahy Co., of Missouri.

Frank Rauchfuss, manager of the Colorado Honey Producers' Association, has sent in the dues for that Association. This is the first Association to affiliate on the $1 per member basis. The Colorado beekeepers never do things by halves. Mr. Rauchfuss was one of the group of men who organized the League in 1920.

When you were in the bank yesterday, you remember reading a little brass sign that stated that a certain company would pay $100 for any information relative to theft occurring in this bank. If you had asked the banker about that sign he would have told you that a burglar thinks twice when he sees that sign, for he never knows how badly some of his pals need that $100. He also tells you that it costs him a nice round sum to place that sign at his teller's window.

The American Honey Producers' League is doing the same thing for its members, and it costs you nothing excepting the cost of the signs. These are worded as follows:

NOTICE

$100 reward will be paid for information leading to the arrest and conviction of any person molesting this apiary in any way whatsoever.

____________________________________________

Member.
American Honey Producers' League.
H. B. Parks, Secretary.
E. G. LeStourgeon, President.

The beekeeper will place his name on the blank line as a member of, and agent for the League. Where conviction is secured the member submits proofs to, and draws on the League for the reward money.

They will cost you 10c each, delivered. They are printed on heavy cardboard and are 12x18 inches. These will last for years.

The idea is that of O. L. Hershiser, Legal Advisor of the League. The cards can be obtained from the Secretary, H. B. Parks, Box 830, San Antonio, Texas.

### Southern California Short

I was much interested in your article summing up the expense of producing honey in June American Bee Journal. It begins to look like the beekeepers are going to figure on what honey is costing to produce. And many will find a cost of over 10 cents per pound.

Our prospects are not at all good. Orange is one of our shortest crops this year. Not to exceed 10 pounds per colony on total number brought to groves. Bees on sage made a living to date in most places. May broke all records for rain, and it is a question just how much good it will do the beekeepers. In some sections much more than others.

L. L. Andrews.

### A Texas Bulletin

Bulletin No. 272 of the Division of Chemistry of the Texas Agricultural Experiment Station has for its title "The Chemical Composition of Texas Honeys and Pecans." It is written by G. S. Fraps and comprises 12 pages.

Six samples of pecans, both meat and shells, were examined, and 18 different samples of honey.

The honey samples contained from 16 to 21 per cent of water, horsemint having the largest water content. The samples varied in reducing sugar content from 71 per cent for huckleberry to 79 per cent for cotton and catclaw honeys. The percentage of variation between different kinds of honey was not large in either case.

Mr. Fraps' analyses do not differ greatly from those of Mr. Brown in Bulletin 110 of the U. S. Department of Agriculture, in which 91 samples were examined.

The analyses of the pecan samples show a fat content for the meats of 69 to 74 per cent, and the protein content varied from 8 to 12 per cent.

Both products are shown to be of high food value.

### Bee Hunting in the Old Days

"One looks upon the woods with a new interest when he suspects they hold a colony of bees. What a pleasing secret it is; a tree with a heart of comb-honey, a decayed oak or maple with a bit of Sicily or Mount Hymettus stowed away in its trunk or branches; secret chambers where lies hidden the wealth of ten thousand little freebooters, great nuggets and wedges of precious ore gathered with risk and labor from every field and wood about."—(John Burroughs, "An Idyl of the Honeybee.")

## AN ADVERTISING CAMPAIGN

The national advertising campaign of the American Honey Producers' League will begin with the September issue of Good Housekeeping, a widely-distributed publication.

The advertising is in charge of the Proctor-Collier Company, of Cincinnati, and they have given their best efforts in preparing the campaign which is about to start, and it is up to the rest of us to keep it going.

The advertisement will cover a two-third page, illustrated by a beautiful, clean-cut sketch of a breakfast table with biscuits and honey. There is also being prepared a receipt book, which will be sent to all inquiries by the Secretary of the American Honey Producers' League. Furthermore, a pamphlet is being prepared explaining to the jobber or wholesale grocer the activities of the American Honey Producers' League and the National Advertising Campaign. This is done more or less to have the wholesale grocer stock honey for the coming demand which will be bound to follow if we all give our hearty support to the League.

Through the efforts of the Proctor-Collier Company there will be interesting articles on honey and bees in many daily newspapers, which will cover not only the large towns but many of the country papers. This will benefit the beekeepers by bringing the words "bees" and "honey" before everyone's eyes more often.

Pledge your support to the American Honey Producers' League—you need it and they want you.

C. F. Muth,
Chairman Advertising Committee.

## SAVING QUEENLESS COLONIES

By Nathan Martin

My method of saving the queenless stocks is as follows:

On April 7 a strong colony with a great mass of brood for the season was deprived of its queen, which was directly transferred to a queenless stock. No danger of introducing here, as every bee was mighty glad almost as soon as the queen was on the comb. This stock is now a strong colony, fully prepared for the main honey flow.

The colony deprived of its queen was treated as follows:

April 19, all queen cells destroyed. April 28, four or five incipient queen cells in convenient places, on two combs, primed with larvæ of suitable age, taken from a colony desirable for breeding. Eleven days after, colony examined—one young virgin out and bees just trying to destroy the other three cells. One good cell was saved and directly transferred to the other queenless colony. (The queen was heard gnawing in the cell, so I felt sure it was O. K.) This other colony had been strengthened by combs of brood given to it, without which I think it would have succumbed to robber bees long ago. It was over 10 days before these two young queens commenced laying, but now their colonies have lots of sealed brood and are getting on fine, although much behind the regular colonies. To make these two colonies really worth while for this year's honey crop they will need an additional super of brood, and I trust there will be colonies that insist on swarming, as usual, and this is just the place for utilizing their surplus energy.

Ontario.

## REMEDY FOR BEE STING

By S. H. Sabine

A short time ago I discovered, through the agency of a little child, the best bee sting remedy I have ever used. It is simply liquid blueing.

My little niece, while out playing one day, was stung on the hand by a wasp and she imemdiately ran into the house, where she got the blueing bottle and applied the wet cork to the sting on her hand and then went out to play again as if nothing had happened.

This may be known to many, but it was entirely new to me, and I have since used it successfully on bee stings. It relieves the pain almost at once, and prevents swelling and inflammation as nothing else that I have ever tried will.

Texas.

(That is another added to the hundreds of remedies for bee stings. The fact is that, if the poison has entered in very small quantity and one of those remedies is applied at once, it will help. But if the entire poison sack has been emptied into the wound and a little time has elapsed so that the very volatile venom has had time to diffuse itself in the blood, especially if it has struck a small vein or artery, the remedies are of but little avail. The above-named remedy is easy to apply and it will not hurt to give it a trial.—Editor.)

### Bees Poisoned

Two apiaries owned by Frank Rasmussen, Greenville, Mich., and located in a commercial apple orchard here, have been completely destroyed by spray poison. The dust spray was used in this case. The trees were not dusted while in bloom, but the continued dry weather may have caused the dust to shift some. These apiaries had been in these orchards for a number of years, with no bad results.

Frank Rasmussen.

(This is exceedingly unfortunate. We do not see how it could happen, and your explanation is not sufficient to show. The general public should be informed, so as to avoid such accidents in future.—Editor.)

## TOO LATE TO CLASSIFY

FOR SALE—1,000 colonies of bees located around Brawley, Calif., in the Imperial Valley, where crop failure is unknown. Portable Extracting outfit, two autos and one 1½-ton truck, storage tank, honey house and dwelling house. Bees in two-story 10-frame hives; no queen over one year old. This is a going concern and a money maker. If you want an outfit of this size and mean business, come look us over. Half cash, balance as you make it. Reason for selling, going to South America this fall. T., care American Bee Journal,
Hamilton, Ill.

FOR SALE—Select queens, untested, $1.15; 6 or more, $1.10 each; select untested, $1.60; 6 or more, $1.50 each;; safe arrival.
Hazel V. Bonkemeyer,
Randleman, R. D. No 2, N. C.

WANTED—A man who thoroughly understands the care of bees; a good job for the right party. References required. Address
R. T. Parker,
69 Appleton Ave., Pittsfield, Mass.

WANTED COMB HONEY WE ARE IN THE MARKET FOR 10 TO 20 CARLOADS

Must be 4¼x4¼x1⅞ in Beeway sections

Describe the quality, grade and quantity and when you will have it ready for shipment

Will take less than carload lots, if fancy and well packed in carriers

Also extracted honey

HOFFMAN & HAUCK, Inc., Woodhaven, N. Y.

# CLASSIFIED DEPARTMENT

Advertisements in this department will be inserted for 5 cents per word, with no discounts. No classified advertisements accepted for less that 35 cents. Count each initial or number as one word.

Copy for this department must reach us not later than the 20th of each month preceding date of issue. If intended for classified department it should be so stated when advertisement is sent.

## BEES AND QUEENS

FOR SALE—20 colonies in 10-frame hives, $10 per hive. Dr. T. A. Kragness, 6031 Wentworth Ave., Chicago, Ill.

THAGARD'S ITALIAN QUEENS—I am breeding from breeders obtained this spring from Italy. Untested, $2 each; 12, $18. Queens from my famous stock, untested, $1.25 each; 12, $11.50.
V. R. Thagard, Greenville, Ala.

FOR SALE—Three-banded Italian queens, $1.25 each; $12 per dozen Tested, $2.
Jul. Buegeler, New Ulm, Texas.

FOR SALE—400 stands clean bees, extracting equipment; good location; for eason write. The Oregon Apiary Co., Nyssa, Oregon.

CARNIOLANS—Gentle, prolific, wonderful honey gatherers. Descriptive circular free. Untested queens, $1.50 each; $17 per dozen. August is an excellent time to requeen.
A. G. Hann, Glen Gardner, N. J.

THREE-BAND and GOLDEN QUEENS—Reared in separate yards. Order from us and get pure stock for your summer and fall requeening. At our special price, beginning July 1, untested, $1.25 each; 12, $1.00 each; tested, $2.00 each. We have a good number ready for shipment and will fill your order promptly. Dr. White Bee Co., Sandia, Texas.

QUEENS ON APPROVAL—If our $1.50 and $2.00 queens are not perfectly satisfactory, have them in the office for return mail and get your money back. Birdie M. Hartle, 924 Pleasant St., Reynoldsville, Pa.

WE BELIEVE we have the best Italian queens obtainable. Our new system is working wonders. Untested, $1.25; tested, $2.25; virgins, 50c. Am booking orders for 1922.
F. M. Russell, Roxbury, Ohio.

FOR SALE—Three-banded Italian queens from best honey-gathering strain obtainable (no disease). Untested queens, $1 each; 6, $5; 12, $9. Select untested, $1.10 each; 6, $5.75; 12, $10. Safe arrival and satisfaction guaranteed. Your orders filled promptly.
Alabama Bee Co., Rt. 1, Fort Deposit, Ala.

FOR SALE—Golden Italian queens, untested, $1; 6 for $5. Tested queens, $2.
J. F. Michael, Winchester, Ind.

PROMPT SHIPMENT of golden or 3-banded queens. Untested only. One, $1.25; 6, $7; 12, $13. Safe arrival and satisfaction.
Ross B. Scott, La Grange, Ind.

FOR SALE—Pure 3-banded Italian queens, reared from the best honey-producing mothers, mated to pure drones. Untested, each, $1.25; 6, $7; 12, $13. Tested, each, $2.50.
H. N. Boley, Hillsboro, Iowa.

SPECIAL—Leather Italian queens, untested, 90c; two or more, 65c; select 25c higher. One, two and three-frame nuclei with select untested queens, $3, $4 and $5. Booking orders for 1922 packages.
Tupelo Honey Co., Columbia, Ala.

SWARTS' GOLDEN QUEENS produce golden bees of highest quality. Untested, $1.50 each, 6 for $8; tested, $3. Satisfaction guaranteed. D. L. Swarts, Lancaster, O., Rt. 2.

FOR SALE—Three-banded Italian queens, untested, $1.25 each; 6, $7.50; 12, $14. Tested queens, $2.50 each; 6, $15. The above queens are select stock. Safe arrival and satisfaction guaranteed.
Rob't B. Spicer, Wharton, N. J.

MY famous three-banded Italian queens, $1.50 each, 6 for $8, after June 1.
J. W. Romberger, Apiarist, 3113 Locust St., St. Joseph, Mo.

SIMMONS QUEENS, bees and nuclei, goldens and three-band.
Fairmount Apiary, Livingston, N. Y.

HARDY ITALIAN QUEENS, $1 each.
W. G. Lauver, Middletown, Pa.

FOR SALE—Unsurpassed Italian queens, ready June 1; untested, $1.50; 6, $7.50; 12, $14; 50, $55; 100, $105. Tested, 1, $2.50; 6, $13.50. My queens are actually laying before they are sent out.
J. D. Harrah, Freewater, Oregon.

FOR SALE—Hardy northern bred Italian queens and bees, each and every queen warranted satisfactory. For prices and further information write for circular.
H. G. Quirin, Bellevue, Ohio.

BEES AND QUEENS from my Carolina apiaries, progeny of my famous Porto Rican pedigreed breeding stock.
Elton Warner, Asheville, N. C.

FOR SALE—Leather colored Italian queens, tested, until June 1, $2.50; after, $2. Untested, $1.25; 12, $13. Root's goods at Root's prices. A. W. Yates, 15 Chapman St., Hartford, Conn.

FOR SALE—Root's strain of golden and leather-colored Italian queens; bees by the pound and nuclei. Untested queens, $1.50 each; select untested, $2 each; tested, $2.50 each; select tested, $3 each. For larger lots write. Circular free. A. J. Pinard, 440 N. 6th St., San Jose, Calif.

WE are booking orders for our golden Italian queens for spring delivery after April 15. Untested queens, 1, $1.50; doz., $15; select untested queens, 1, $1.75; doz., $18; virgin queens, 1, 75c; doz., $9; tested queens, 1, $3; doz., $36. Safe arrival guaranteed.
Tillery Brothers, Georgiana, Ala.

BOOK YOUR ORDERS for QUEENS now—Goldens, $2; tested, $3; banded, $1.50; tested $2.50; six or more, 10 per cent less.
Clover Leaf Apiaries, Wahoo, Neb.

EDSON APIARIES now booking orders for queen bees for delivery during season of 1921. Prices: One untested queen, $1.75; 50 untested queens, $57.50; 100 untested queens, $100. Orders filled in rotation; first shipments March 1, 1921.
Edson Apiaries, Gridley, Calif.

BEES AND QUEENS from my New Jersey apiary. J. H. M. Cook,
1Atf 84 Cortland St., New York City.

BEES BY THE POUND, ALSO QUEENS—Booking orders now. Free circular gives prices, etc. See larger ad elsewhere.
Nueces County Apiaries, Calallen, Texas,
E. B. Ault, Prop.

WILL SHIP a few choice queens with frames of brood, $4 each. Jes Dalton, Bordelonville, La.

HIGH QUALITY QUEENS at reduced prices. Three-banded Italians, reared from best hustlers, non-swarming, gentle and prolific. Can ship by return mail. Satisfaction guaranteed. Health certificate with each shipment. Untested, 1 to 10, $1 each; over 10, 90c each. Select untested, 1 to 10, $1.25 each; over 10 $1.15 each. Tested, $1.75 each
Frank Bornhoffer, Rt. 17, Mt. Washington, O.

TRY my Caucasian queens, $1.25 each; hybrids 35c each. Peter Schaffhauser, Havelock, N. C.

SELECT QUEENS only. Three-band and leather colored Italians. Tested, $2.50; untested, $1.25 each.
Geo. W. Coltrin & Son, Mathis, Texas.

ITALIAN QUEENS, $1 each, or $10 per doz., after June 1. Will book a few more three-frame nuclei of black or hybrid bees with Italian queen, for delivery after June 15, at $5 each, or 3 lbs. bees on frame of honey for $4.25. These will be fine to winter for early spring work. Otto Diestel, Elza, Ga.

DAY-OLD QUEENS—1, 50c; 100, $50; 500, $250. Untested queens, $1 each. High quality 3-banded Italians. Mailed in safety introducing cages. Delivery and satisfaction guaranteed in U. S. and Canada. Information in circular. Order early
James McKee, Riverside, Calif.

HUMMER QUEENS—Untested, $1 each, $9 per dozen. Tested $1.50 each, $15 per dozen. A trial will convince you that they cannot be beaten. Safe arrival and satisfaction guaranteed. Nuclei at same old price.
Geo. A. Hummer & Sons, Prairie Point, Miss.

FOR SALE—Golden Italian gueens, untested, $1.15, 6 for $6.50; 12 or more, $1 each; tested, $2 each; select tested, $3 each; extra select tested, $4 each. No bees for sale.
D. T. Gaster, Randleman, R. D. 2, N. C.

FOR SALE—3-banded Italian queens, untested $1.25 each; 6, $6.50; 12, $12. Select untested, $1.50 each. Satisfaction guaranteed.
W. T. Perdue & Sons,
Rt. No. 1, Fort Deposit, Ala.

FOR SALE—Golden Italian queens, untested, 1, $1.25; 6 $7,
E. A. Simmons, Greenville, Ala.

YOU CAN SAVE queens by using All Right push-in comb introducing cage, 25c, post paid. O. S. Rexford, Winsted, Conn.

ITALIAN QUEENS—Three-banded, select untested, guaranteed. Queen and drone mothers are chosen from colonies noted for honey production, hardiness, prolificness, gentleness and perfect markings. Price after July 1, $1.25 each; one dozen or more, $1 each. Package bees a specialty. Send for circular.
J. H. Haughey Co., Berrien Springs, Mich.

CHOICE ITALIANS—Select queens, tested, $2.50; untested, $1.25 each.
Geo. W. Coltrin & Son, Mathis, Texas.

QUEEN BEES—Allen's 3-banded Italians, disease free; the ones that get results. Price, each, $1.50. J. H. Allen,
Orr Station, Anderson, S. C.

FOR SALE—Italian queens, untested, 1 for $1.25, 6 for $7, 12 for $13.50. Tested, $2. Mismated queens will be replaced if returned in 30 days; dead queens will be replaced if returned by return mail. I have tested breeder from the A. I. Root Co., and will breed queens from her for those that prefer them to my old strain of hustlers.
R. B. Grout, Jamaica, Vt.

FOR SALE—Burleson's three-banded Italian queens. The kind of bees that get the goods. Guaranteed to please or money back. For balance of season as follows: 1 select untested queen, $1.25, 6 for $7, 12 for $13.50, 100 or more $1 each. Send all orders, together with remittance, to J. W. Seay, manager, Mathis, Texas.
T. W. Burleson, Waxahachie, Texas.

FOR SALE—Famous strain of queens of Geo. B. Howe, A. I. Root, Jno. M. Davis three-banded bees, and we also sell extra fine goldens, bees that are bees, both in beauty and wintering, and disease-resisting; not surpassed for honey-gathering, or at least we have not been able to find any that were their superior. Untested, 1 queen, $2.50; 6, $12; 12 queens, $20; 25 queens, $40; 50 queens, $70. Try our queens. Also, we shall sell 2-lb. packages, 3-lb. packages with queens for 1922. We try and give prompt service; queens by return mail if we possibly can do so.
H. B. Murray, Liberty, N. C.

FOR REQUEENING use Williams' heavy laying Italian queens; they produce hardy, hustling three-banded workers. Bred from the best disease-resisting strain, and priced in accordance with the present price of honey. Untested, $1.25, 6 for $6.50, 12 or more $1 each; tested, $2. Satisfaction guaranteed.
P. M. Williams, Ft. Deposit, Ala.

WE are now equipped to handle your early spring orders for package bees and queens, especially bred for the production of honey. Our queens are bred from the best stock obtainable, and will give satisfaction. Safe arrival guaranteed. Write for prices and terms.
Sarasota Bee Co., Sarasota, Fla.

FOR SALE—Highest grade three-banded Italian queens. Select untested, 1, $1.25; 6, $6.50; 12, $12; 50, $47.50; 100, $90. Virgins, 45c each. No disease, and satisfaction guaranteed. A. E. Crandall, Berlin, Conn.

WE are offering for remainder of season our bright Italian queens, untested at $1 each, $10 per dozen, $75 per hundred. We guarantee safe arrival, pure mating and reasonable satisfaction in United States and Canada. Cash must accompany all orders unless parties are known or satisfactorily rated.
Graydon Bros., Rt. 4, Greenville, Ala.

CALIFORNIA ITALIAN QUEENS at special prices. After June 15 and to October 1, 1, $1.25; 6, $7; 12, $13; 25 ond over, $1 each; 100, $90. See larger ad elsewhere. Circular free.
J. E. Wing, 155 Schiele Ave., San Jose, Cal.

NUCLEI—We make a specialty of shipping 2-frame nuclei. Write for special prices for June delivery. Queens at the following prices: Untested, $1.50 each; 6, $8; 12, $15; 50, $60; 100, $100. Tested queens, $2.50 each.
Cotton Belt Apiaries, Roxton, Texas.

THE ITALIAN QUEENS OF WINDMERE are superior three-banded stock. Untested, $1.50 each, 6 for $8; tested $2.50 each; select tested, $3. Prof. W. A. Matheny, Ohio University, Athens, Ohio.

LARGE, HARDY, PROLIFIC QUEENS—Three-band Italians and goldens, pure mating and safe arrival guaranteed. We ship only queens that are top notchers in size, prolificness and color. After June 1, untested queens $1.50 each, 6 for $8, 12 or more $1.40 each, 25 or more $1.25 each. Tested queens $3 each, 6 for $16.
Buckeye Bee Co., Justus, O.

QUEENS—I am now offering queens at pre-war prices. Untested, 1, $1.25; 25 or more, $1 each.
W. H. Moses, Lane City, Texas.

## HONEY AND BEESWAX

WANTED—2,000 pounds good white liquid honey. Send sample and quote best price.
Eber Coate, Georgetown, Ill.

WANTED—Pure white clover extracted and comb honey. Send sample and price wanted.
F. L. Hostetter, Osceola, Mo.

EXTRA FINE white sweet clover honey, new crop, in 5-gallon cans, cases of 2 cans, $15; 1 can, $8. Write for prices on a ton or a car load. Sample 10c. C. S. Engle, 200 Center St., Sioux City, Iowa.

FOR SALE—Choice clover extracted honey. State quantity wanted. New crop will be ready about August 10.
J. D. Beals, Oto, Iowa.

FOR SALE—Extra fine Michigan white clover and basswood honey. Almost water white; indeed, I doubt if the color, body and flavor can be beaten. Put up in 60-lb. cans, 2 to the case, at 15c per pound, or in 5-pound pails, 50 to the barrel, at 17c per pound. Sample 15c.
O. H. Schmidt, Rt. 5, Bay City, Mich.

HONEY FOR SALE—In 60-lb. tins, water white orange, 14c; water white sweet clover, 12c; extra light amber sage, 11c; New York State buckwheat, 10c, for immediate shipment, from New York. Hoffman & Hauck, Inc.
Woodhaven, N. Y.

FOR SALE—Finest Michigan raspberry, basswood and clover No. 2 white comb, $5.50 per case; No. 1, $6; fancy, $6.50; extra fancy, $7, 24 Danz. sections to case. Extracted, 60-lb. cans 15c per lb. W. A. Latshaw, Clarion, Mich.

FOR SALE—Very fine quality basswood-milkweed mostly milkweed) honey in 60-pound cans. P. W. Sowinski, Bellaire, Mich.

FOR SALE—Extracted honey. Write for prices. A. L. Kildow, Putnam, Ill.

FOR SALE—New crop fancy white comb honey, No. 1, $7 per case of 24 sections; No. 2 grade, $6; clover extracted honey, 15c per pound; amber and buckwheat, 12½c, two 60-lb. cans to case; amber in 50-gallon barrels, 10c per pound.
H. G. Quirin, Bellevue, Ohio.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendering. Fred W. Muth Co.,
204 Walnut St., Cincinnati, Ohio.

HONEY WANTED—Give particulars in first letter. Elton Warner,

## SUPPLIES

SAVE MONEY on your shipping cases, tin and glass honey containers, etc. Our free price list tells you how. If you rear queens for sale, be sure to send for our price card of mailing cages. The Rattray-Hamilton, Co.,
Almont, Mich.

WESTERN BEEKEEPERS—We can demonstrate that you can save money on buying bee supplies of best quality. Write for our latest price list.
The Colorado Honey Producers' Association,
Denver, Colo.

HAVE YOU any Bee Journals or bee books published previous to 1900 you wish to dispose of? If so send us a list.
American Bee Journal, Hamilton, Ill.

FOR EXCHANGE—264-egg strain, line bred Reds for bees, hives and supplies. Silver Dorkings for sale. Penova Farms,
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FOR SALE—Single tier comb shipping cases and carriers, K. D., all sizes, at bargain prices. Also covers, bottoms, supers, etc. Write for my new bargain list and be convinced. C. C. Brinton, Bloomsburg, Pa.

## FOR SALE

FOR SALE—350 colonies of a fine strain Italian bees; all supplied well with honey. Write for full particulars. Chas. Heim & Sons,
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FOR SALE—Cedar or pine dovetailed hives; also full line of supplies, including Dadant's foundation. Write for catalog.
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FOR SALE—My place of 4 acres, with cottage, garage, bee house and other out buildings; 4 miles from town. Best bee location in southern Wisconsin. Can sell honey at the door. Also 75 colonies in 8-frame hives, 175 hive bodies with drawn combs. Bees inspected, guaranteed no disease. Reason for selling, wish to move nearer my wife's folks. Write for price. James D. Benson,
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FOR SALE or EXCHANGE—Small acreage and home near town, and 280 colonies of bees in first-class condition. Extracting equipment. Bargain price. Will exchange for ranch property in foothills.
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FOR SALE—House 30x30, with cellar for bees and extracting room, 4 acres hillside land, finest of location along Mississippi river; white clover, basswood; 1 mile from railroad station and postoffice; $2,000 without bees. Can furnish 50 stands of bees transferred this season from box hives into 10-frame hives with full sheets foundation, at $12. Extracting supers with full depth Hoffman frames, at 75 per cent catalog price; or will take partner with cash to enlarge business.
L. W. Maxwell, Turkey River, Iowa.

BOOKLOVERS will be glad to learn of a reprint of the two volumes of Cheshire's valuable work "Bees and Beekeeping." We have secured a small supply and can offer the two-volume set at $6, postpaid.
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FOR SALE—"Superior" Foundation (Weed process). Quality and service unexcelled.
Superior Honey Co., Ogden, Utah.

## WANTED

WANTED—Beeswax, old combs and cappings for rendering on shares. Also wax accepted for trade. Top market prices offered.
A. I. Root Co., Council Bluffs, Iowa.

WANTED—We have many calls from educators for copies to complete their files of the older Bee Journals. If you have complete volumes or miscellaneous numbers of any Bee Journals previous to 1900, write us, giving a list, and we will be glad to quote a price. Old bee books, now out of print, are also desirable. We act as a clearing house for this kind of materials.
American Bee Journal, Hamilton, Ill.

WANTED—Bees in colonies, comb and extracted honey. Frank Coyle, Penfield, Ill.

WANTED—Extractor.
Walter P. Brown, Rt. 1, Carthage Mo.

WANTED—Your order for "Superior" Foundation. Prompt shipments at right prices.
Superior Honey Co., Ogden, Utah.

## SITUATIONS

WANTED—Situation. Man 28, Swedish, good health, experienced in queen rearing and extracted, wishes steady work with a first-class queen breeder or comb and extracted honey producer, to gain more experience. Ready to come; go anywhere. Nordenswan,
Care The Farmer Apiaries, Ramer, Ala.

WANTED—Single man as foreman. Comb honey production. Steady employment. Must be able to manage help and several outyards. State wages and experience, also age.
B. F. Smith, Jr., Fromberg, Mont.

WANTED—Manager for the Michigan Honey Producers' Exchange, Inc. Must be a practical supply man and thoroughly understand bottling and sale of honey. A good position for the right man. Applicant kindly give age, experience and reference in first letter, and oblige. E. D Townsend, Chairman,
Northstar, Mich.

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SAMPLE FREE—They say "It's as good now as when Hutchinson ran it." Under new ownership, our bee journal is growing fast, better every issue, a "different" kind of a journal. Let's get acquainted. $1.50 a year, and worth it.
The Domestic Beekeeper, Lansing, Mich.

LEAGUE EMBLEMS—We still have a number of U. S. Beekeepers' emblems, buttons or pins, bronze or gold. Send 50 cents and get one
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BLACK SIBERIAN HARES—Enormous sizes, delicious meat and beautiful fur. Write for information and prices.
Siberian Fur Farm, Hamilton, Canada.

DR. MILLER'S BEE SONGS are in "Songs of Beedom." Ten songs for 20 cents, postpaid; 2-cent stamps taken. Also Teddy Bear souvenir postal cards, 10 for 10 cents. Address Geo. W. York, Box 84, Spokane, Wash.

**HONEY** FINEST Michigan Raspberry Basswood and Clover comb and extracted honey.
Unexcelled for quality.

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| Crate 6 cases 24 sec. Fancy comb | $45.00 |
| Crate 6 cases 24 sec. A No. 1 comb | 42.00 |
| Crate 6 cases 24 sec. No. 2 comb | 39.00 |
| Crate 6 cases 24 sec. extra fancy | 48 00 |
| Two cans 120 lbs., extracted | 30 00 |

*Send Today for Free Sample*

**W. A. LATSHAW COMPANY, Clarion, Michigan**

### Adult Bee Diseases

The disease of my adult bees entirely disappeared upon the feeding of sugar syrup and requeening those colonies affected. Those colonies that had previously been given feed did not seem to get the disease.
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# INCREASE YOUR INCOME

**By Selling Your Honey at Retail**

L. A. Coblentz of Idaho could get no offer above eight cents per pound for his last years crop from the bottlers. With his wife's help he sold more than 100,000 pounds direct to the consumer at current retail prices, viz: 15c per pound in sixty pound cans; 20c in ten pound pails and 22c in five pound pails.

You can do as well with the same effort. Don't ruin your future market by cutting below a living price, but put up your crop in attractive containers and sell it direct to the consumer.

We will furnish you the labels and other necessary printed matter.

*Send today for our label catalog and samples of printing*

**AMERICAN BEE JOURNAL, HAMILTON, ILLINOIS**

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# Three-Banded Leather-Colored Italian Queens

**Bred from Selected Root Home-bred Breeders**

Our breeding queens are backed by over 50 years' experience in breeding good queens.

| | | | |
|---|---|---|---|
| Untested | 75c each | Tested | $2.00 each |
| Select untested | $1.00 each | Breeders | $5.00 to $15.00 each |
| Pound packages, shipped on comb foundation. | | Nuclei | |
| 1-lb. package, no queen | $2.00 | 1-frame, no queen | $2.00 |
| 2-lb. package, no queen | $3.75 | 2-frame, no queen | $3.75 |
| 3-lb. package, no queen | $5.25 | 3-frame, no queen | $5.25 |

**Special prices on large orders and contracts.**

**Root quality bee supplies. We are the bargain house for Southern beekeepers. It will pay you to get our Catalog and Prices.**

**THE SOUTHLAND APIARIES, Hattiesburg, Miss.**

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**PAILS** **CASES** **CANS**

At greatly reduced prices. We are confident we can save western beekeepers on their requirements for all types of honey containers. Get our figures before buying.

AND at last, an inexpensive, but attractive advertising leaflet, bearing your apiary name, for distribution among your customers. Here is an effective means of building up a high class retail trade. Let us send you a sample, and quote.

**THE A. I. ROOT CO. OF IOWA, Council Bluffs, Iowa**

**ELECTRIC IMBEDDER**

Price without Batteries, $1.50
Not postpaid.

Actually cements wires in the foundation. Will work with dry cells or with city current in connection with transformer. Best device of its kind on the market.

For sale by all supply dealers.

**Dadant & Sons,** Manufacturers HAMILTON, ILL.

WESTERN

**BEE HIVES**

Manufactured from
Red Cedar and White Pine

Made with lock corners.

Standard sizes kept in stock. Odd sizes made to order.

Write us for prices on anything you may want.

**WILLIAMS BROS.**

5125 E. 82nd St., S. E. Portland, Oregon

**Books on Beekeeping**

First Lessons in Beekeeping, by C. P. Dadant. 167 pages, 178 illustrations. Cloth $1.

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**AMERICAN BEE JOURNAL**
**HAMILTON, ILL.**

**QUEENS**

**Select Three-Banded Italians of the highest quality** (one grade) Eight hundred honey-gathering colonies from which to select the very best breeders. No one has better bees than I. Can make prompt delivery by return mail. I have not yet disappointed a customer.

**PRICES**

For 1 untested $1.00; for 6, $5.50; for 12 or more, $10.00 per dozen
Tested queens $2.00 each

A new customer from Missouri, where you have to show them, writes: "The dozen queens arrived promptly. They are the most beautiful I ever saw." (Name on request.) Another one, from the same state, writes: "Your 100 2-lb. packages averaged over 90 pounds surplus honey per colony; 10 pounds more per colony than the other 2-lb. packages purchased elsewhere." H. H. THALE, Durham, Mo.

Now listen to this, from Ontario, Canada: "Bees and queens purchased of you last season all wintered without a single loss. Save me 50 untested queens for May delivery." (Name on request.)

My customers say my queens stand the northern winters. They are bred up for this purpose, combined with the highest honey-gathering qualities and prolificness.

Pure mating, safe arrival, and satisfaction guaranteed. It is left with customer to say what is satisfaction.

**JASPER KNIGHT, Hayneville, Alabama**

**BEEKEEPERS** WE MANUFACTURE DOVETAILED HIVES, HOFFMAN FRAMES, SECTIONS AND SHIPPING CASES

Our hives are made of best grade White Pine, cut accurate and smooth to standard measure. Sections are made of Basswood polished on both sides. There are no better made.

We carry a complete line of everything used in the apiary. Our shipping facilities are as good as can be found anywhere. We want your business. We guarantee prompt and satisfactory service. Price list free.

**MARSHFIELD MANUFACTURING COMPANY, Marshfield, Wis.**

**TIN CANS and GLASS JARS**

**We have secured a fresh supply of tin cans and glass jars as follows:**

60 lb. cans in bulk and 1 and 2 in a case
10 lb. cans in cases of 6, 50 and 100
5 lb. cans in cases of 12, 50 and 100
2½ lb. cans in cases of 24, 100 and 200
6 oz. jelly glasses in reshipping cases of 24
16 oz. Mason jars in cases of 24

Our prices are made as low as is possible. Now is the time to pack your honey and get it ready for your nearby market

*Write for complete price list*

**DADANT & SONS, Hamilton, Ill.**

**MR. BEEKEEPER—**

We have a large plant especially equipped to manufacture the supplies that you use. We guarantee all materials and workmanship. We ship anywhere. We allow early order discounts and make prompt shipments. *Write for free illustrated catalog today*

**LEAHY MFG. CO., 90 Sixth Street, Higginsville, Missouri**

**J. W. ROUSE, Mexico, Missouri** **A. M. HUNT, Goldthwaite, Texas**

**TENNESSEE-BRED QUEENS**

**Forty-nine Years' Experience in Queen-Rearing**
**Breed Three-Band Italians Only**

| | Nov. 1st to June 1st | | | June 1st to Nov. 1st | | |
|---|---|---|---|---|---|---|
| | 1 | 6 | 12 | 1 | 6 | 12 |
| Untested Queens | $2.00 | $ 9.00 | $16.80 | $1.50 | $ 8.00 | $14.50 |
| Select Untested | 2.25 | 10.50 | 18.00 | 2.00 | 9.50 | 16.00 |
| Tested | 3.50 | 20.00 | 35.00 | 2.50 | 13.00 | 25.00 |
| Select Tested | 4.00 | 22.50 | 40.00 | 3.00 | 16.00 | 30.00 |

Select tested, for breeding $7.50

The very best queen tested for breeding $15

Capacity of yard 6000. I sell no bees by the pound or nuclei except with high priced tested and breeding queens

Queens for export will be carefully packed in long distance cages, but safe delivery is not guaranteed

**JOHN M. DAVIS, Spring Hill, Tenn.**

Five colonies of your stock produced 2660 finished sections—the best one 616 finished sections
JOHN M. BIXLER, Corning, Iowa, February 1, 1921

**MAKE YOUR BEES PAY**

If you want bigger honey profits, *get the best queens you can buy*. This is the secret of successful bee raisers. Hundreds of America's greatest honey producers order Forehand's 3-banded Italian Queens. Follow their example. Order from Forehand and be sure of satisfactory results. Backed by 28 years' successful experience in queen breeding and honey production. Take no chances. Experimenting is costly. So certain am I that my queens will satisfy you that I will gladly replace unsatisfactory queens delivered in the United States or Canada, or refund your money. You be the judge and jury. Can anything be fairer?

**PRICES—Aug. 1 to Nov. 1.**

| | 1 | 6 | 12 |
|---|---|---|---|
| Untested | $1.00 | | $10.00 |
| Select untested | 1.25 | | 12.00 |
| Tested | 2.50 | $13.00 | 24.00 |
| Select tested | 3.00 | 16.50 | 30.00 |

Bees in 2-lb. packages—1 package, $6; 25 or over, $5.80; 50 or over, $5.40; 100 or over, $5; without queens.

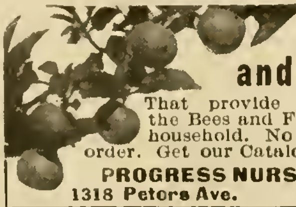
Place your order *now*. Prices low, quality considered. Write for circular and discounts on large orders.

**N. FOREHAND**
**RAMER, ALA.**
**Breeder of 3-banded Italian Queens exclusively**

**Established 1885**

Beekeepers should send for our new catalog, free. Beehives made of white pine. Root Co.'s old standby make of supplies. Order early. Beeswax in exchange for supplies or cash.

**J. Nebel & Son Supply Co.,**
High Hill, Mo.



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That provide Nectar for the Bees and Fruit for the household. No Cash with order. Get our Catalog TODAY.

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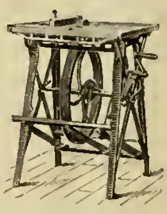

**BARNES' FOOTPOWER MACHINERY**

Read what J. E. Parent, of Chariton, N. Y says: "We cut with one of your Combined Machines last winter 50 chaff hives with 7-in. cap, 100 honey-racks, 500 frames and a great deal of other work."

**W. F. & JOHN BARNES**
**995 Ruby St., ROCKFORD, ILLINOIS**

**SHE-SUITS-ME queen-bees, prices for 1921: Untested Italians, $2 each; $1.75 each for 10 or more, prior to June 15. After June 15, 1 to 9 queens $1.50 each, 10 to 24 $1.40 each, 25 and up $1.25 each.**

**ALLEN LATHAM,**
**Norwichtown, Conn.**

**BEE SUPPLIES**

We carry a complete stock of supplies at all times, and can make prompt shipments. Our prices will interest you.

**Send Us Your Inquiries**
**A. H. RUSCH & SON CO.**
**Reedsville, Wis.**

**QUEENS**

Quirin's Northern bred, hardy Italians, now ready to mail. Safe delivery and satisfaction guaranteed.

PRICE OF BEES AND QUEENS

| | 1 | 6 | 12 |
|---|---|---|---|
| Untested | $ 1.50 | $ 8.00 | $15.00 |
| Tested | 2.00 | 10.00 | 18.00 |
| 2 Comb nuclei | 6.00 | 32.00 | 60.00 |
| 3 Comb nuclei | 8.00 | 45.00 | 85.00 |
| 8 frame colony | 12.00 | 70.00 | |
| 10 frame colony | 15.00 | 85 00 | |

Breeders fair, $5, the very best $10 each.

Add the price of queen wanted with nuclei or colony. This is our 30th consecutive season at queen rearing. Address all orders to

**H. G. QUIRIN, Bellevue, Ohio.**

CHESHIRE'S "BEES AND BEEKEEPING," in two volumes, has recently been reprinted. We offer it to our subscribers at $6 for the two volumes, postpaid.
AMERICAN BEE JOURNAL, Hamilton, Ill.

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Discounts from our 1921 Red Catalog of "Falcon" Beekeepers' Supplies

All prices given on:

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**Distributor for the Central West, RODMAN SALES CO., Gateway Station, Box 18, KANSAS CITY, MO.**

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*"Where the good Beehives come from"*

# HONEY

**All sweets have experienced sensational declines**

**The world's supply of sugar is estimated at 1,250,000 tons in excess of requirements.
If you have honey, sell it early. If you cannot sell it, WE CAN.
Write us and send samples.
MONEY for HONEY**

## PATON & COWELL

**No. 217 Broadway, New York, N. Y.**

## HIVES AND QUEENS AT PRE-WAR PRICES

Hives, with frames and one-piece wood covers, made of best grade of cypress and accurately manufactured.

Prices: 10-frame size, $14 per lot of 5. 8-frame size, $13.50 per lot of 5. Full depth supers (with self-spacing frames), $1.50 each.

15 per cent discount on the above prices.

Queens: Untested, $1 each; 10 or more, 65c; tested, $1.50. Breeders, $3 each.

These Italian queens are bred from best stock obtainable.

Medium brood foundation, 68c per pound.

**A. R. IRISH, Ludowici, Ga.**

**QUINN'S QUEENS OF QUALITY**

Have no superiors—"There's a reason." Are Mandelian bred, good qualities accentuated. Gray Carniolans, Gray Caucasians, most gentle of all, prolific, hardy, vigorous, disease-resisiting white comb builders—they deliver the goods.

ITALIANS, 3-banded, line-bred, pedigreed; need no boosting; they speak for themselves.

**CHAS. W. QUINN, Sabot, Va.**

**MOTT'S NORTHERN BRED ITALIAN QUEENS**

Have a World-wide reputation.
Sel. Unt., 1, $1.25; 6, $7.50; 12, $15.
Sel. guaranteed pure mated or replace, 1, $1.75; 6, $10; 12, $18.
Sel. tested, $2.50 each.

Filling orders by return mail at this present writing by the aid of my Southern branch. Plans, "How to Introduce Queens" and "Increase," 25c.

**E. E. MOTT, Glenwood, Mich.**

## QUEENS

Requeen now for the coming winter, with **Gentle Three-band Italians.**

Untested, $1.25; 12 or more, $1 each.

**All Queens Guaranteed.**

**D. W. HOWELL, Shellman, Georgia.**

QUEENS OF

## MOORE'S STRAIN

OF ITALIANS

Produce Workers

That fill the supers quick
With honey nice and thick

They have won a world-wide reputation for honey-gathering, hardiness, gentleness, etc.
Untested queens, $1.50; 6, $8; 12, $15.
Select untested, $2; 6, $10; 12, $19
Safe arrival and satisfaction guaranteed.
Circular free.

I am now filling orders by return mail.

**J. P. MOORE, Queen Breeder**
Route 1 Morgan, Ky.

# Quality Bee Supplies

FROM A

# Reliable House

Without fear or favor, I place my BEE SUPPLIES and SERVICE before you.

It is the small annoyances that often grow into disastrous results. Avoid the so-called "little losses" by using MONDENG'S GOODS.

Quality is first—save time when you put your goods together, by getting supplies that are accurately made. Service is next—no delays when bee supplies are ordered from my factory.

I am ready to meet your urgent needs.

Send for my new price list.

Closing out all Langstroth and Wisconsin hives and supers. Also Langstroth triangular top-bar frames and eight-frame D. T. supers for 4x5 sections. Will sell at cost price. Write for quotations.

**CHAS. MONDENG**

**146 Newton Ave. N. and 159 Cedar Lake Rd. Minneapolis, Minn.**

# QUEENS, Select Three-Banded

**Write for descriptive circular of our Select Italian Queens. Pure Mating, safe arrival and satisfaction guaranteed.**

| | 1 | 6 | 12 | 50 |
|---|---|---|---|---|
| Untested | $1.25 | $ 7.00 | $13.00 | $50.00 |
| Tested | 3.00 | 16.00 | 30.00 | |

"The queens you furnished me last year were all tip-top, and one of them caps the climax. I never saw anything like her."—D. E. Scott, Caney Springs, Tenn.

**HARDIN S. FOSTER, Columbia, Tenn.**

# QUEENS, THREE-BAND ITALIANS

**BRED FOR BUSINESS**

Only one grade—select. Satisfaction guaranteed

| | 1 | 12 | 25 to 50 | 100 |
|---|---|---|---|---|
| Untested | $1.00 | $10.80 | $ .80 ea. | $70.00 |
| Tested | 1.75 | 18.00 | | |

A two-pound package of bees and untested queen $4.75 25 or more packages $4.50 each

**CANEY VALLEY APIARIES, J. D. Yancey, Mgr.**

**BAY CITY, TEXAS**

# GOLDEN ITALIAN QUEENS

| | Nov. 1 to June 1 | | | Juoe 1 to Nov. 1 | | |
|---|---|---|---|---|---|---|
| | 1 | 6 | 12 | 1 | 6 | 12 |
| Untested | $2.00 | $ 9.00 | $16.80 | $1.50 | $ 8.00 | $14.50 |
| Select Untested | 2.25 | 10.50 | 18.00 | 2.00 | 9.50 | 16.00 |
| Tested | 4.00 | 22.50 | 40.00 | 3.50 | 10.50 | 36.00 |
| Select Tested | 4.50 | 25.00 | 45.00 | 4.00 | 22.50 | 40.00 |

**BREEDERS $12.50 TO $25.00**

10 per cent additional for Exported Queens. Queens for Export will be carefully packed in long distance cages, but safe delivery is not guaranteed.

NO NUCLEI, FULL COLONIES OR POUND PACKAGES.

**BEN G. DAVIS, Spring Hill, Tenn.**

## Stutts Italian Queens are Supreme

My Italians are gentle, prolific, very resistant to foulbrood, and the best of honey gatherers. Untested, $1.25; 6, $6.50; 12, $12.50. Select untested, $1.50; 6, $8; 12, $15.

Take advantage and requeen your yard with the best strain of Italians.

I sell no nuclei, or bees by the pound. Health certificate with every queen.

Pure mating and safe arrival guaranteed.

**ALFRED A. STUTT, Lincoln, Ill.**

# QUEENS

I. F. Miller's strain Italian queen bees. Northern bred for business; from my best *Superior Breeders* (11 frames brood on April 7). Gentle, roll honey in, hardy, winter well, not inclined to swarm, 3-banded; 27 years breeding experience. Satisfaction guaranteed. Safe arrival in U. S. and Canada. Untested, $1.50; 6, $8; 12, $14. Select, $1.75; 6, $9; 12, $17.

**I. F. MILLER, Brookville, Pa., R. 2**

# SECOND-HAND AND DAMAGED BOOKS

In revising our stock of books, we find a number of damaged and second-hand books, good for all practical purposes, but not worth full price.

We offer them at the following postpaid prices:

| | |
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| Cowan's Honeybee | $1.00 |
| Cheshire, Vol. 1 and 2 | 5.00 |
| Phillips Beekeeping | 1.75 |
| Langstroth Revised | 1.50 |
| Cowan's Waxcraft | 1.00 |
| Nelson's Embryology | 1.50 |
| Root's A B C | 2.25 |
| Practical Queen Rearing | .60 |
| First Lessons in Beekeeping | .60 |
| 1,000 Answers to Beekeeping Questions | .75 |
| Dadant System of Beekeeping | .60 |
| Doolittle's Queen Rearing | .35 |
| Beekeeping in the South | .60 |
| Advanced Bee Culture | .75 |

Address all orders to

**American Bee Journal, Hamilton, Illinois**

# GOOD QUEENS

**GOLDEN OR THREE-BANDED**

Fine large queens of best quality.

Untested only, 1, $1.25; 6, $7.00; 12, $13.00

**ROSS B. SCOTT, LaGrange, Ind.**

# Crop and Market Report

Compiled by M. G. Dadant

For our August issue we asked reporters to write us on the following questions:

1. How is the honey crop so far?
2. What are the prospects for the balance of the year?
3. How is honey selling? Are there any big buyers, and what are they offering for comb and extracted?
4. What should No. 1 comb honey retail for? What should the price be for 5-lb. pails of extracted? For 10-lb. pails?
5. What, in your opinion, should be the jobbing price this fall for amber and white extracted? Of comb honey, No. 1 and No. 2?

## THE HONEY CROP

Southern New England reports a very good crop, whereas the northern part has only half a crop. New York reports are from fair to poor, indicating that the crop will not be large, and the same is true throughout the rest of the East.

In Georgia and Florida the crop has been light, probably half a crop, while in Mississippi and Alabama, though the crop is not large, it is well above last season, when the sweet clover failed. Louisiana, starting poor, has had a most remarkable flow. Tennessee and Kentucky nave been fairly well favored, especially in the east portions, and the same applies to the Carolinas and Virginias.

Ohio seems to have had a very good crop, with poor crops in Indiana. Wisconsin, Minnesota and Michigan are very poor, especially in the southern half of these States, where the drought has been severe. Illinois will have very little white surplus honey. Iowa is poor in the eastern half, with a fairly good crop in the western, though cut down by drought. Missouri has a fair crop and Kansas, Nebraska and Dakota only fair, with Nebraska the best of the three.

It is too early yet for any data on the intermountain territory, though indications are for a fair crop, nothing phenomenal.

Texas started in with much discouragement, but mesquite has yielded this year as of old, and reports are now that normal conditions will be attained.

Washington and Oregon are only fair, with North California good. In Southern California there has been much discouragement. Early, it was entirely too dry, and rains came too late to do the sages the most good. Indications are for not more than one-third crop, and possibly less, with many failures.

Basing opinion on reports, the dry weather has hurt many localities and the flow should not be as good as last year. Even though there may be more bees in the country, the total crop of honey should not be nearly up to last year.

Canada, especially Ontario, is having an excellent crop.

## PROSPECTS

In very few locations are prospects excellent for the balance of the year, running mostly from poor to fair.

## SALES AND BUYERS

Honey sales are slow in most localities. Report is made of one car of white Idaho honey being sold at 10 cents f. o. b. New York. The Texas Association has reduced its price to a basis of 9 cents for extracted and reports fair sales at that price, with much pushing necessary to make the honey go.

One or two offers have been made by large buyers on a basis of $4.50 for No. 1 comb and 8 cents for white extracted, with little disposition to sell at this figure jobbing just at present.

## RETAIL PRICES

The consensus of opinion is that No. 1 comb honey should not sell for less than 30 cents per section, retail, in the section of production, which means that if there is any effort made to maintain a uniform price, the price should be put at at least 35 cents per section. Demand during 1920 was great for comb honey, greater than the supply, and it should not be difficult to clean up this year's production at remunerative prices.

The lowest price suggested on extracted honey was 75 cents for 5-lb. pails and $1.40 for 10-lb. The same reporter suggested a 10-cent price jobbing for white honey. These prices are hardly in line, since it is generally agreed that the retail price should be double the jobbing price, cost of containers to be added. Basing our figures on 10-cent honey, the 5's should sell for $1.10 to $1.25 and the 10's from $2.10 to $2.25.

In reality, the general run of prices suggested were $1 for 5-lb. and $2 for 10-lb:, with a suggestion of shading of prices of the 10's to $1.90. It seems that the above prices are not any too high.

## JOBBING PRICES

The lowest price suggested for comb was $3.50 for No. 2 and $3.75 for No. 1. This must have been for the amber comb, however, for a majority of prices suggested were about $4.75 for No. 2 and $5.50 for No. 1, with the very best white alfalfa-sweet clover held possibly 50 cents per case higher. These prices are f. o. b. shipping point.

Undoubtedly the amount of comb honey produced in the East and Middle West will be a minimum this year, owing to the peculiarities of the honey flows, which have not been conducive to comb-honey production.

Wide variation is seen in the prices for extracted. The lowest prices suggested are 6 cents for amber and 8 cents for white, and range up to 20 cents for white, some evidently having been out of touch with the markets since early last fall.

Most of the suggestions centered around a price of from 7 to 9 cents for amber and 9 to 12 cents for best white extracted, f. o. b. shipping point.

Present indications would not warrant optimism on honey prices. Sugar has reached the extreme low price of $5.25 in the New York markets, while honey has shown an inclination to drop slowly in price with each weekly price sheet sent out by commission men. Also the attitude of the buying public has been clearly not to buy anything except what is actually needed.

On the other hand, the cloud has a silver lining. Honey certainly has tobogganed as much as other farm products, and statisticians tell us that we may look for a gradual incline in farm prices till they reach a remunerative and stable basis.

There is also a dearth of fruits. The sweet demand should in part be supplied by substituting honey. Maple products are also the shortest in years.

The new proposed duty on honey is 2½ cents a pound. There are already indications that West Indian honey is seeking European markets. The duty would have the immediate effect, if enforced, of raising the domestic price in proportion, especially immediately after the rate went into effect.

More than anything else, however, the price of honey will be governed by the beekeepers themselves, whether they throw their honey on the market quickly for what they can get, or pursue a more sane and safe policy and let honey come on the jobbing markets as slowly as possible, so as to create a demand on the part of the jobbers, rather than throw the offers at them.

In a retail way, the sooner honey is pushed, the better. No efforts should be lost to push local sales at good substantial prices, and no effort should be lost to keep the market regularly supplied throughout the year.

Experienced salesmen tell us that one trouble with the honey price situation is that the local markets are glutted during five months only to be bare and unsolicited during the balance of the year, a condition which will not be conducive to putting honey on the list of staple products instead of luxuries.

Honey, except possibly comb, is not a perishable product, does not deteriorate with six months holding, and should not be so treated by the beekeeper.

EXPERIENCE

*is a great teacher*

Do you profit by the experience of others?

During our twenty-nine years of successful commercial queen rearing we have helped many of America's best beekeepers find the road to success. Another improvement on your present successful plans may have a vital and valuable influence on the future course of your business as it did on W. G. Warnocks, proprietor of the Oakwood Poultry and Fruit Far at Geneseo, Illinois. In his last order he said:

"The package and queens I got from you last season did fine. I divided and built up three good colonies. The queens were very prolific. In four weeks after receiving this package they had eight frames of brood and honey. I handle them without either smoke, veil or gloves."

**Prices**

| | 1 | 6 | 12 | 100 |
|---|---|---|---|---|
| Untested | $1.25 | $ 6.50 | $11.50 | $0.90 |
| Select untested | 1.50 | 7.50 | 13.50 | 1.00 |
| Tested | 2.00 | 10.00 | 18.50 | |
| Select tested | 2.75 | 15.00 | 27.00 | |

We guarantee pure mating and satisfaction the world over. Safe arrival in the United States and Canada.

**W. J. FOREHAND & SONS, Ft. Deposit, Ala.**

ITALIAN QUEENS

**Reared and sold to July first this season. Our efforts shall always be to furnish as many customers as possible the best Italian Queens at the least possible price**

| | |
|---|---|
| Untested, 1 to 12 | $1.00 each |
| Unfested, 12 or more | .75 each |
| Tested, 1 to 12 | 2.00 each |
| Tested, 12 or more | 1.50 each |
| Breeders | $5.00 to 25.00 each |

Return dead and unsatisfactory queens. Can save you money on **Cypress Bee Supplies**

**THE STOVER APIARIES, MAYHEW, MISSISSIPPI**

**3-Banded — Highest Quality of Italian Queens — Golden**

Twenty-five years of select breeding from the best.

We are prepared to ship queens by return mail, or on very short notice. Every queen sent out by us is guaranteed to arrive in perfect condition and to give absolute satisfaction. Our strains have proved themselves to be not only great honey gatherers but also very resistant to disease, especially European foulbrood.

Listen to what others say about them:

"One of your queens built up from a nucleus and made 360 pounds of surplus honey. Enclosed find $75 for fifty queens. I want these for requeening European foulbrood colonies, as I find your stock resistant." Troy, Pa. (Name on request.)

"The queens I got from you have all the others skinned. They are gentle, best of workers and stand the long winters here. Other queens coming from a shorter distance do not hold a candle to them." Gilbert Plains, Man., Canada. (Name on request.)

PRICE LIST OF OUR QUEENS

Untested.................. $1.10 each; 6 to 25, $1.05 each; 25 to 50, $1 each; 50 up, 90c each
Select untested.... $1.25 each; 6 to 25, $1.15 each; 25 to 50, $1.10 each; 50 up, $1 each
Tested ................ $2.25 each; 6 to 25, $2.15 each; 25 to 50, $2.10 each; 50 up $2 each
Select tested .... $3.00 each; 6 to 25, $2.75 each; 25 to 50, $2.50 each; 50 up, $2 25 each
Breeders, $25 up to $35 each. Wings clipped free of charge on request.

**M. C. BERRY & CO., Hayneville, Ala., U. S. A.**

**OUR BACKDOOR NEIGHBORS**

**BY FRANK C. PELLETT**

A book of fascinating stories of animal life. Will delight the children and please the grown folks. Illustrated with many protographs from life.

**PRICE $1.50 POST PAID**

**AMERICAN BEE JOURNAL**

**HAMILTON, ILL.**

**TIME IS MONEY**

When the honey flow is on and you need supplies which will enable your bees to gather a maximum crop of honey. If you are rushed and in a particular hurry, try ordering from Council Bluffs. For we are well stocked with the supplies you need. Can ship over any one of nine trunk lines to your very back door, and are prepared to give your order immediate and individual attention.

If you want action, try us. That is, if you use quality goods. While your harvest may be largely gathered, you will want shipping cases, pails, jars and additional bee supplies during the next few months. We are in position to make immediate shipments.

**THE A. I. ROOT CO. OF IOWA, COUNCIL BLUFFS, IA.**

The "Railroads Everywhere" Town

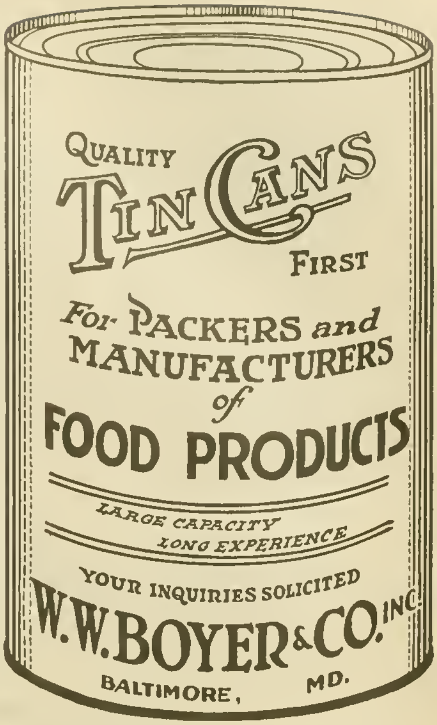
**SECTIONS! SECTIONS!! SECTIONS!!!**

While our present stock lasts we give you the opportunity to buy No. 2 sections at a big reduction. We offer as follows:

| | |
|---|---|
| No. 2—4¼x4¼x1⅞ two beeway Sections, per thousand | $8.00 |
| No. 2—4¼x4¼x1½ plain Sections, per thousand | 7.00 |
| No. 2—4x5x1⅜ plain Sections, per thousand | 7.00 |

We are pleased to announce a big reduction in Bee Supplies. Send us a list of the goods you wish to purchase and we will quote you our new reduced prices.

**AUGUST LOTZ COMPANY, Boyd, Wisconsin**



**LILLY'S**
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Seattle
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HEADQUARTERS FOR

**LEWIS BEEWARE**
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**WESTERN PINE HIVES**

*Write Us. It Pays*

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**The Chas. H. Lilly Co.**
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**PORTER BEE ESCAPE SAVES HONEY TIME MONEY**

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BEE ESCAPE
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For sale by all dealers
If no dealer, write factory
**R. & E. C. PORTER, MFRS.**
**Lewistown, Illinois, U. S. A.**
(Please mention Am. Bee Journal when writing)

A NEW BEE BOOK
"Dadant's System of Beekeeping"
Send for a copy today.
Price $1.00.

# HONEY HONEY HONEY

¶ Beekeepers who are supplying Honey to a regular family trade, or who are located along the highways, and are supplying motorists, know that their customers want a honey of a uniform color and flavor.

¶ And unless the Honey is at all times uniform in color and flavor, customers sometimes become dissatisfied.

¶ Our special blend of fancy Honeys (liquid) is always uniform and is of a fine mild flavor, and will satisfy the most exacting trade.

**SPECIAL BLEND OF FANCY HONEY (LIQUID)**

| | |
|---|---|
| 60 lb. Tins, 2 per case | 14c lb. |
| 10 lb. Tins, 6 per case | 16c lb. |
| 5 lb. Tins, 12 per case | 17c lb. |
| 2½ lb. Tins, 24 per case | 18c lb. |

**VARIOUS GRADES (CRYSTALLIZED)**

| | |
|---|---|
| Water White Orange | 14c |
| Water White Sweet Clover | 12c |
| Extra Light Amber Sage | 11c |
| N. Y. State Buckwheat | 10c |

## GLASS AND TIN HONEY CONTAINERS

2½-lb. cans, 2 dozen reshipping cases, $1.45 case; crates of 100, $6.50

5-lb. pails (with handles), 1 dozen reshipping cases, $1.35 case; crates of 100, $8.30

10-lb. pails (with handles), ½ dozen reshipping cases, $1.10 case; crates of 100, $12.75

60-lb. tins, 2 per case—new, $1.30 case; used, 50c.

**WHITE FLINT GLASS, WITH GOLD LACQD. WAX LINED CAPS**

8-oz. honey capacity, cylinder style........$1.50 per carton of 3 doz.

16-oz. honey capacity, table jar service. $1.40 per carton of 2 doz.

Quart, 3-lb. honey capacity, Mason style, $1 per carton of 1 doz.

**HOFFMAN & HAUCK, Inc. Woodhaven, N. Y.**

# CALIFORNIA ITALIAN QUEENS

The old reliable three-band stock that delivers the goods. This stock is descendant from the A. I. Root Co.'s best breeders. Then the J. P. Moore long tongue, red clover strain was added. Next some of Doolittle's famous stock was secured, one breeder in particular, one which was selected by Mr. Doolittle himself and caged with his own hands a short time before his death, proved extra remarkable. This season the Jay Smith strain has been secured, and these are proving equal, if not superior, to anything I have ever seen. In order to keep running to maximum capacity till fall, I am offering

SPECIAL PRICES FOR JUNE, JULY, AUGUST AND SEPTEMBER

Delivery June 15 to October 1, for orders booked in advance:

| | |
|---|---|
| Select Untested | 1, $1.25; 6, $7.00; 12, $13.00; 25 to 50, $1 each; 100, 90c each |
| Tested | 1, $1.75; 6, $10.00; 12, $18.00 |

Superior breeder, 1 year old, $5.00

Every queen actually laying before being caged, and fully guaranteed. I also guarantee safe arrival in United States and Canada. Circular free.

155 SCHIELE ST. **J. E. WING** SAN JOSE, CAL.

CYPRESS "THE WOOD ETERNAL"

CYPRESS RESISTS ALL ROT INFLUENCES

S C M A
TRADE MARK REG. U.S. PAT. OFFICE

ALWAYS MAKE SURE THAT THIS TRADE-MARK IS STAMPED ON EACH PIECE OF

"*Tidewater*" *Cypress*

*"THE WOOD ETERNAL"*

THEN YOU BUY SAFETY (AND SATISFACTION) FIRST, LAST AND 'TWEEN TIMES

"ALL-HEART" GRADE FOR BEEKEEPERS' USE

Southern
Cypress Manufacturers
Association

ADDRESS NEAREST OFFICE

**1251 Poydras Building**
**NEW ORLEANS, LA.**

**1251 Graham Building**
**JACKSONVILLE, FLA.**

**ALUMINUM HONEYCOMBS**

will eventually be used by every progressive beekeeper.
Don't be one of the last to profit by their
remarkable merits

COMBS MANUFACTURED BY

**The Duffy-Diehl Company of Pasadena, Calif.**

DISTRIBUTED ONLY BY

**THE DIAMOND MATCH COMPANY**
APIARY DEPARTMENT

CHICO, CALIFORNIA

**THE QUESTION—**

## SHALL I REQUEEN NOW?

**THE ANSWER—**

## AUTHORITIES URGE REQUEENING DURING LATE JULY AND AUGUST—BECAUSE

The fall queen is cheaper. Unlike an old queen, a new queen in the fall will lay well, regardless of the fall honey flow. At least two full cycles of brood should be laid by the new queen, insuring a strong colony for wintering.

Requeening means a break in egg-laying of nearly one week, with the consequent loss of brood and bees. With spring requeening this loss of bees is a real loss in honey later.

Fall requeening brings this loss at a time when the least damage is done. Requeen now. Do not wait till spring.

## ROOT QUEENS ARE HARDY, DISEASE-RESISTING AND PROLIFIC

QUEENS—July to October

| | | | |
|---|---|---|---|
| Untested | $1.20 | Tested | 3.00 |
| Select untested | 1.50 | Select tested | 3.50 |

NUCLEI—Shipped by Express

NUCLEI—Our one, two or three-frame nuclei go out on full worker combs in wired frames, well supplied with bees and the proper amount of brood.

| | Weight. | July to Octobe |
|---|---|---|
| 1-frame nucleus, no queen, | 4- 7 lbs. | $2.10 |
| 2-frame nucleus, no queen | 9-12 lbs. | 3.30 |
| 3-frame nucleus, no queen | 12-16 lbs. | 4.50 |
| 5-frame nucleus, no queen | 22-27 lbs. | 6.30 |

If queen is wanted, make a selection and add her price to the above.

BEES BY THE POUND—Shipped by Express.

| | Weight. | July-September |
|---|---|---|
| 1-lb. pkg. of bees, no combs | 3 lbs. | $2.10 |
| 2-lb. pkg. of bees, no combs | 5 lbs. | 3.30 |
| 3-lb. pkg. of bees, no combs | 7 lbs. | 4.50 |

If queen is wanted, make a selection and add her price to the above.

# THE A. I. ROOT COMPANY

**MEDINA, OHIO, U. S. A.**

AMERICAN BEE JOURNAL

SEPTEMBER, 1921

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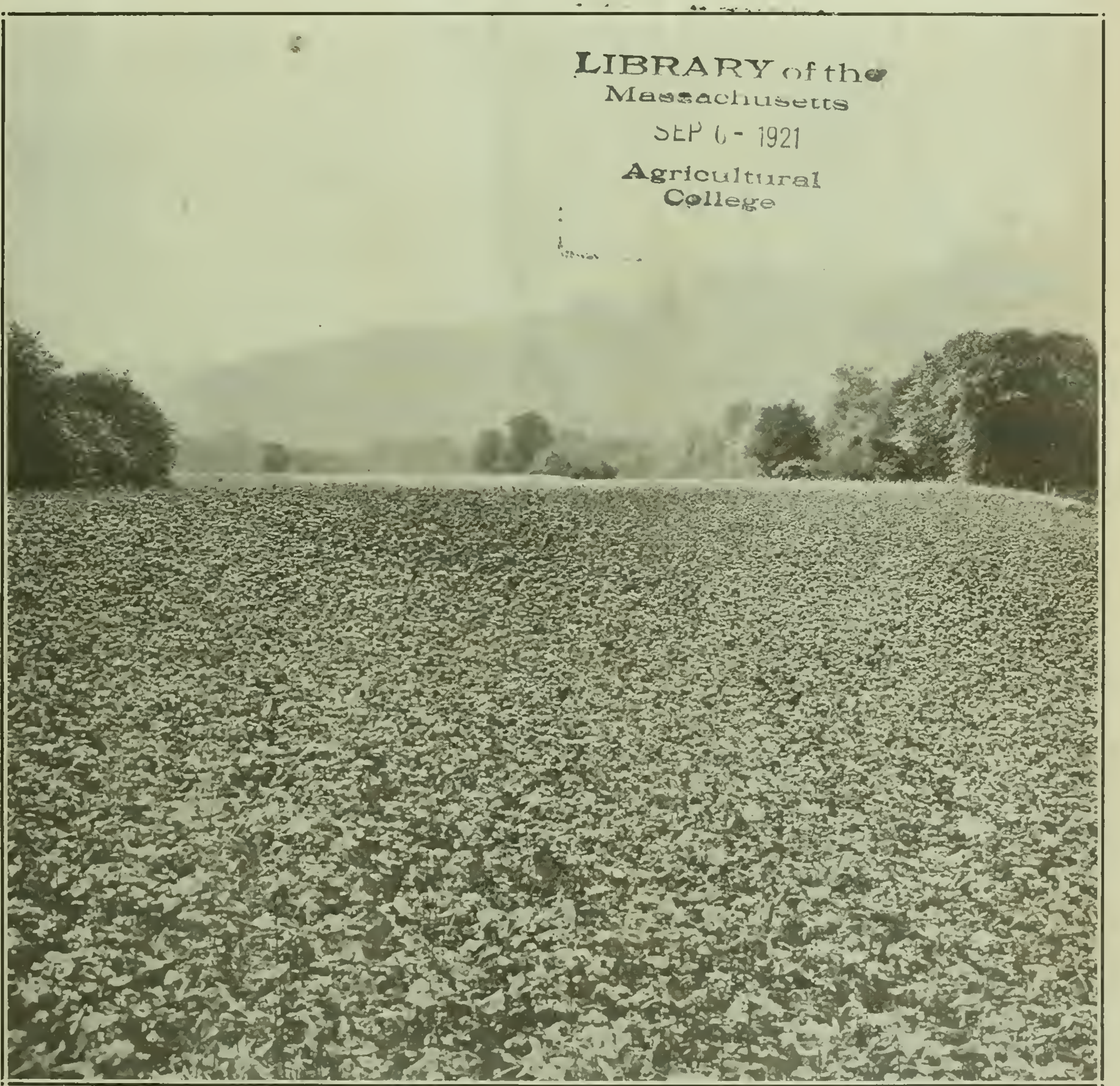

BUCKWHEAT FIELD NEAR THE APIARIES OF L. O. SIMMONS AND N. C. McNEIL, AT MARLINTON, WEST VIRGINIA.

HAVE YOU SOLD YOUR HONEY?

We are buying **Comb** and **Extracted** honey. Send us a sample and tell us what you have to offer. Name your most interesting price delivered to Cincinnati. Remittance goes forward the day shipment is received

Old comb—Don't forget we render wax from your old combs and cappings. Write us for shipping tags

We offer you friction top cans

| | | |
|---|---|---|
| 2½ lb. cans | $ 4.25 per 100 | $ .50 per 10 |
| 5 lb. cans | 8.00 per 100 | 1.00 per 10 |
| 10 lb. cans | 12.00 per 100 | 1.40 per 10 |

1 lb. Round Screw Top Jars, 2 dozen in shipping case, 10 case lots $1.60 per case

Prices cash with order, f. o. b. Cincinnati

**THE FRED W. MUTH CO., Cincinnati, Ohio**
**PEARL AND WALNUT STREETS**

**THE DIAMOND MATCH CO.**
(APIARY DEPT.)

MANUFACTURERS OF

**Beekeepers' Supplies**

CHICO, CAL., U. S. A.

Dadant's incomparable Foundation is always kept in stock. Western Beekeepers can be supplied advantageously.

BEEKEEPERS, wherever they may be located, before deciding where to obtain supplies, should write to the Diamond Match Co. for prices and for their Beekeepers' Supply Catalog.

This Company are the largest manufacturers in the world who make Bee Supplies. They own their own timber lands, mills and factories, and supply goods direct from the tree to the beekeeper.

Full advantage of this low cost of production is given to the purchaser.

The Apiary Department (which is in charge of experienced supply men, who are also practical beekeepers) maintains a constant excellence of product and offers unsurpassed service.

**ALUMINUM HONEYCOMBS**

The Diamond Match Co. and their agents are the sole distributors in the United States of the Aluminum Honeycombs, manufactured by the Duffy-Diehl Co., Inc., of Pasadena, Calif. Write for descriptive pamphlets. Eastern beekeepers should send their orders for the Diamond Match Co.'s supplies to **Hoffman & Hauck, 1331 Ocean Avenue, Woodhaven, N. Y.**

**DIAMOND MATCH CO., Apiary Department**
**CHICO, CALIFORNIA**

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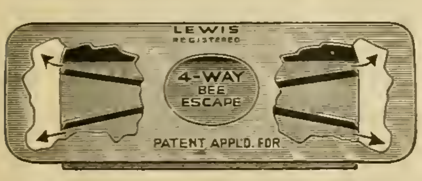
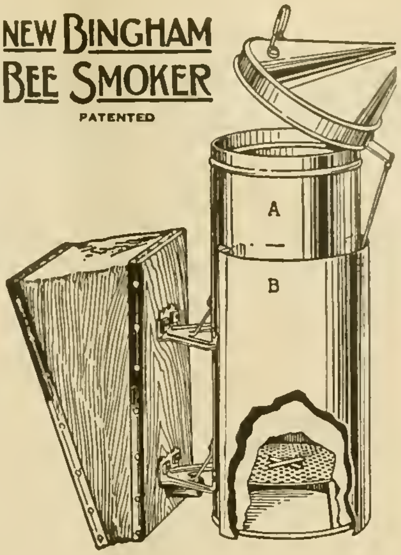
**Lewis 4-Way Bee Escapes**



Four exits from supers. Fits all standard boards
Springs of coppered steel. Made of substantial metal.

Made by
G. B. LEWIS COMPANY,
Watertown, Wis., U. S. A.
Sold only by Lewis "Beeware" Distributors.

NEW BINGHAM
BEE SMOKER
PATENTED

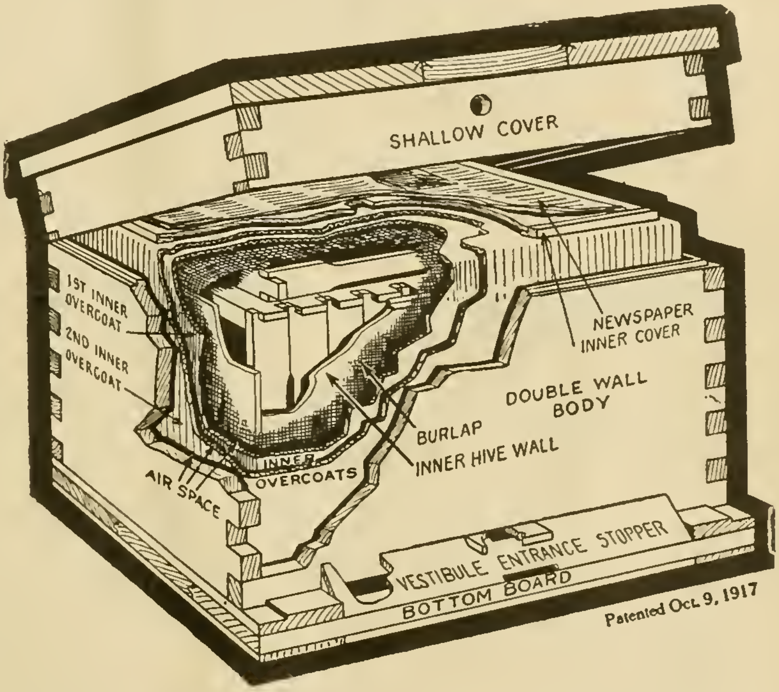


**BUY BINGHAM BEE SMOKERS**

At a recent meeting or convention of New York State beekeepers, there was a Bee Smoker contest of interest. Those in the contest were allowed one minute to light his smoker, then let it set for 30 minutes. At the end of this period. the smoker that started the best in 30 seconds, won a Queen Bee. They all say this is some Smoker, the kind you should buy. The Woodman Bingham Big Smoke, with shield, won the contest.

| | Size of stove. inches | Shipping weight. lbs. |
|---|---|---|
| Big Smoke, with shield | 4 x10 | 3 |
| Big Smoke, no shield.... | 4 x10 | 3 |
| Smoke Engine .............. | 4 x 7 | 2¼ |
| Doctor ............................ | 3½x 7 | 2 |
| Conqueror ........... ...... | 3 x 7 | 1¾ |
| Little Wonder ................ | 3 x 5½ | 1½ |

**Winter Problem Solved by the Hive with an Inner Overcoat**



It will pay you to try out a sample shipment of these hives the coming winter. The outside walls are made of seven-eighths material and will last a life time. Material and workmanship guaranteed to please you. The Inner Overcoats furnish the close-up protection which brings the bees through the winter in fine condition. We can make prompt shipment, and prices have been reduced. Your order will have our prompt attention.

**Special Sale Honey Packages**

Get our latest reduced prices on all honey packages. Let us add you to our large list of pleased customers in this line of merchandise. Special prices on shipment from factories direct to customer. Sixty-pound cans in bulk and in cases. Friction top pails and cans, all sizes. Clear flint glass. Mason jars, pints and quarts; tumblers, pound jars and other sizes. Get on to our list, so as to get quotations.

**A. G. WOODMAN CO.**
GRAND RAPIDS, MICH., U. S. A.

**A SUPERIOR QUALITY AT LESS COST**

# SUPPLIES

**A SUPERIOR QUALITY AT LESS COST**

Hives, Supers, etc., listed below are in the flat, and are complete with Hoffman Frames, nails, metal rabbets and all inside fixtures
Made by the Diamond Match Co.

**ONE-STORY DOVETAILED HIVE**

| | |
|---|---|
| Five 8-frame | $13.50 |
| Five 10-frame | 14.30 |

**FULL-DEPTH SUPERS**

| | |
|---|---|
| Five 8-frame | $6.70 |
| Five 10-frame | 7.60 |

**SHALLOW EXTRACTING SUPERS**

| | |
|---|---|
| Five 8-frame | $5.00 |
| Five 10-frame | 5.50 |

**NO. 1 STYLE COMB HONEY SUPERS**

| | |
|---|---|
| Five 8-frame | $4.80 |
| Five 10-frame | 5.25 |

**STANDARD HOFFMAN FRAMES**

| | |
|---|---|
| 100 | $7.20 |
| 500 | 33.00 |

**OUR INCOMPARABLE QUALITY FOUNDATION**

| Medium Brood | | Thin Super | | Light Brood | |
|---|---|---|---|---|---|
| 5 lbs. | 74c per lb. | 5 lbs. | 80c per lb. | 5-lb. lots | 76c per lb. |
| 25 lbs. | 73c per lb. | 25 lbs. | 79c per lb. | 25-lb. lots | 75c per lb. |
| 50 lbs. | 72c per lb. | 50 lbs. | 78c per lb. | 50-lb. lots | 74c per lb. |

Aluminum Honey Combs as now made by Duffy-Diehl Co. are meeting with success. We carry these in stock to supply eastern beekeepers.

# HONEY HONEY HONEY

¶ Beekeepers who are supplying Honey to a regular family trade, or who are located along the highways, and are supplying motorists, know that their customers want a honey of a uniform color and flavor.

¶ And unless the Honey is at all times uniform in color and flavor, customers sometimes become dissatisfied.

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**SPECIAL BLEND OF FANCY HONEY (LIQUID)**

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| 60 lb. Tins, 2 per case | 14c lb. |
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| 5 lb. Tins, 12 per case | 17c lb. |
| 2½ lb. Tins, 24 per case | 18c lb. |

**VARIOUS GRADES (CRYSTALLIZED)**

| | |
|---|---|
| Water White Orange | 14c |
| Water White Sweet Clover | 12c |
| Extra Light Amber Sage | 11c |
| N. Y. State Buckwheat | 10c |

PURE VERMONT MAPLE SAP SYRUP, Case of 12 Tins $14.00

# GLASS AND TIN HONEY CONTAINERS

2½-lb. cans, 2 dozen reshipping cases, $1.45 case; crates of 100, $6.50

5-lb. pails (with handles), 1 doz. reshipping cases $1.35 case; crates of 100, $8.30

10-lb. pails (with handles), ½ doz. reshipping cases, $1.10 case; crates of 100, $12.75

60-lb. tins, 2 per case—new, $1.30 case; used 30c

**WHITE FLINT GLASS, WITH GOLD LACQD. WAX LINED CAPS**

8-oz. honey capacity, cylinder style, $1.50 per carton of 3 doz.

16-oz. honey capacity, table jar service, $1.40 per carton of 2 doz.

Quart 3-lb. honey capacity, Mason style, $1.00 per carton of 1 doz.

**HOFFMAN & HAUCK, Inc. Woodhaven, N. Y.**

# AND NOW PREPARE FOR WINTER

¶ If you will be forehanded begin now to get your bees in shape for winter. Young queens, plenty of young bees, ample stores and efficient protection from winter winds are acknowledged requisites.

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# HONEY AREAS OF TEXAS

## Notes on the Principal Regions of the Lone Star State and Its Nectar-Bearing Flora—By H. B. Parks

THE flora of the State of Texas has been studied quite extensively. Published articles give the distribution of several of the major honey plants. No general account, however, has been printed. The State is so large that it embraces almost every class of flora. In the eastern part of the State the Mississippi flora is present. Beech, maple, linden, Virginia persimmon and others, give an eastern appearance to the forests. The southeastern part has the pine, palmetto, cypress and many other plants common to the southeastern part of the United States.

Central Texas possesses a flora all its own. The high lands of the west have the flora common to the Great Plains country. Southwest Texas is Mexican in its plant life. The lower Rio Grande Valley is almost tropical. Texas, west of the Pecos River, is mountain and desert. Yucca and cactus are the more prominent plants.

The State is naturally divided into several plant associations, the boundaries of which follow geological lines. The most of the State is new, geologically speaking. The great glacier did not touch this State, and little has occurred to obliterate formation boundaries. Thus the transition zone is very narrow, even in the case of the carboniferous and archaean. In fact, these zones are rarely over a few hundred feet wide. In this connection it is interesting to note that many plants are rapidly migrating to new locations under the influences of agriculture. Mesquite and retama are the best examples. Great areas that a few years ago were grassy plains are now covered with a dense growth of these shrubs. Post oaks are rapidly invading the coast prairies. These are cases of forestation rather than reforestation.

Each of these natural divisions contains its own nectar-producing plants.

No. 1, as shown in the map representing the cultivated area, is peculiar in that the most of the honey produced is accredited to introduced plants. Fruit trees and sweet clover are given as the main plants of value. Native annuals and certain trees, including linden, doubtless contribute much to the crop.

No. 2 is the River Valley area. Hard wood and pine forests, interspersed with swampy land, and their natural plant associations make a flora that it is predicted will some day become the equal of any for honey production. While there are a large number of bee owners here, modern methods are almost unknown. Linden, tupelo gum, rattan, yupon (**Ilex spec**) and many other hard-wood plants are sources of nectar. Many swamp annuals, including smartweed, water lilies and pickerel weed, are known to give a surplus.

Black land Horsemint (*Monarda citriodora*).

No. 3, the Gulf Area, is not so good for a bee location. Along the water courses yupon, wild peach and willow, together with the annuals, give the beekeeper good returns. In this division some horsemint is found and cotton yields at times.

No. 4, the Black Land Area. Both the horsemints are found in abundance. Gaillardia gives a spring surplus, while cotton gives the larger crop. In places a fall flow from smartweed and boneset is common.

No. 5, the Chaparral Area, is the commercial beekeeping section. Guajillo, catsclaw, mesquite, guayacan, granjeno, cactus and a large number of less known bushes are nectar bearing. Horsemint, cotton and a host of wild annuals add to the surplus. It is a notable fact that the newer the land geologically, and the less the nitrogen content of the soil, the larger per cent of leguminous plants. As the legumes are the best nectar plants, this area presents an unique location for the beekeeper. This section is famous for the water-white guajillo, or Uvalde honey.

No. 6, the Mesquite Plain Area, lies north of the chaparral, west of the black land, and east of the west plains. It is covered with mesquite, cactus, catsclaw and other semi-arid plants. Few bees are kept and honey flows are reported locally from catsclaw, mesquite, whitebrush and annuals. It is not probable that this section will ever become a honey-producing area. This is because of the fact that this area receives much less rainfall than the chaparral, which has almost the same plant association.

Also the soil is of a very different type.

No. 7, the West Plains Area, reaches from the Oklahoma line south to the Pecos River. No large trees are present. Low, scrubby mesquite and hackberry are found along the water courses and canyons. The flora is much the same as western Kansas, Nebraska and the Dakotas. Very few bees are kept in this district, and unless some nectar-bearing crop like alfalfa or sweet clover is introduced in the future, the prospects for beekeeping are meager.

No. 8, the Trans-Pecos Area, is desert and mountain. The flora is very different from that of any other part of the United States. Plants of the yucca, century and cactus types predominate. Mesquite and its close relative, the screw bean or tornillo, are yielders of some honey. Catsclaw of several species are also present. The bee locations are isolated and far apart and are found in the mountain coves and at the heads of canyons. Very little detailed information is at hand on the minor nectar plants of this region.

### Special Areas

The Alfalfa Areas. The largest one is found in the Rio Grande Valley, just below El Paso. The next is along the Pecos River, in Ward and the surrounding counties. Several other small ones occur along the Rio Grande, including the one at Laredo. While no data is at hand to the exact amount produced, it is safe to say that with the enlargement of these irrigated areas, which is bound to come, alfalfa honey will be near the head of the list of the honeys produced.

The Guajillo Area. Guajillo has various spellings, but has the the common pronunciation of Wahea. The name is said to come from a Spanish word meaning a water bottle. Two explanations are given for the name, one that the rain and dew are long retained among its fine leaflets, the other that it is because of the copious supply of nectar. Guajillo is found only on the dry gravel ridges in the chaparral area. This plant gave the fame to Uvalde, yet it will be seen from the map that many other counties produce this fine water-white honey.

The Cotton Area. This area is co-extensive with the black land area. Within the outer boundaries given cotton sometimes gives a flow, but cannot be depended upon. Outside of the black land area and within the whole area given are small black land deposits, which are highly nectar producing. These are mostly located in river valleys and along the Gulf Coast.

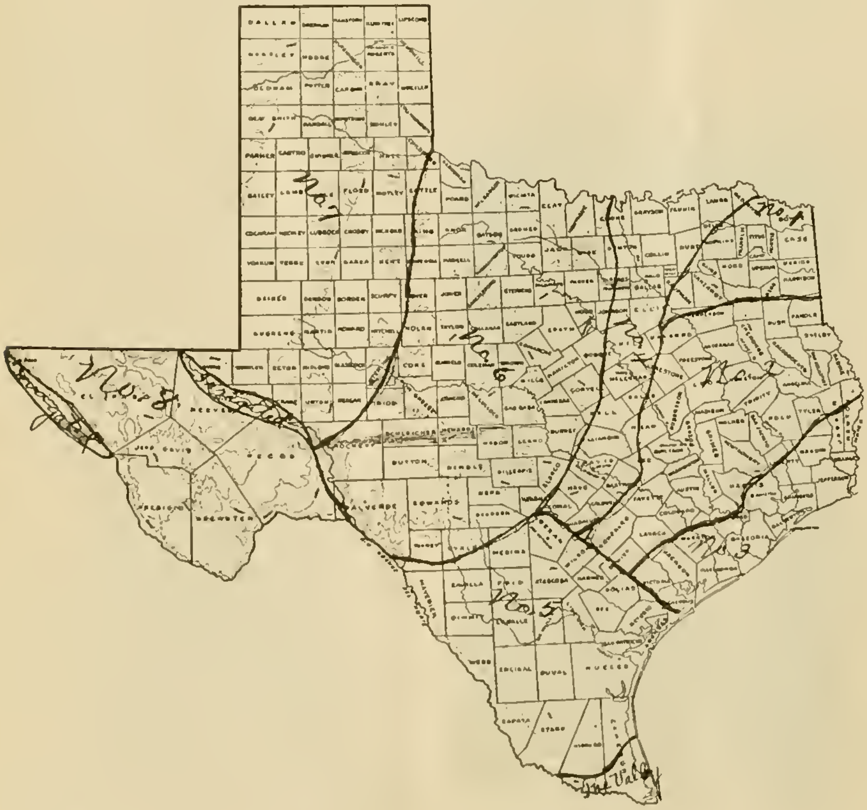
The Horsemint Area. This area is very nearly the same as the cotton areas. The Monarda citriodora type of the mint being dominant on the black land and the M. punctata type on the grey, red and sandy soils.

The Mesquite Area. Like the cotton area, there are two divisions to the mesquite area. The heavy flows from this tree have all been in the central division shown on the map. The outside area sometimes gives flows varying in amount as one proceeds from the edge of the producing area toward the limits of the mesquite area. A very peculiar section is indicated on the east side of the producing area.

In this cul-de-sac, which includes the abrupt hills of the Edwards Escarpment, cedar and oak replace mesquite to such an extent that mesquite is only a minor honey plant.

The Edwards Escarpment, while not possessing a large number of honey plants, is the habitat of several species of sumac, which give a large flow of honey almost every year. The honey is amber and is not of a very high quality, but it finds its place in the general market, thus making beekeeping in these sumac locations profitable.

Many of the minor honey plants have distinct areas, but as these areas are included within a given plant association, these areas are not given. Bitter weed, while a honey plant, is a pest to the honey producer because of its dark amber, bitter honey. It is restricted in Texas to the territory east of the black land area and north of the chaparral.



Plant Regions of Texas—No. 1, Cultivated area. No. 2, River Valley. No. 3, Gulf Prairie. No. 4, Black Land. No. 5, Chaparral Area No. 6, Mesquite Plain. . No. 7, West Plains. No. 8, Trans Pecos.

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## WINTERING TWO QUEENS IN ONE HIVE

By F. W. L. Sladen
Dominion Apiarist

It is now three years since experiments with a system of wintering two queens in one hive were started at the Experimental Farm at Ottawa. The idea had its origin in the remarkably quick warming up of the spring in this locality, which, it was noticed, causes strong colonies to begin swarming during the honey flow from dandelion nearly a month before the honey flow from clover begins. This led to the belief that a larger number of bees could be raised in the time for the clover flow if two queens instead of one were wintered in the hive.

Experiments proved that this belief was correct. On June 1, 1919, in six hives of bees that had wintered two queens each, the capped brood on one side of the combs had advanced over an average approximate area of 1,100 square inches, each compared with 670 square inches in eleven regular colonies, and when the clover flow started (a week earlier than usual), on June 15, the advance was 1,330 square inches, compared with 840 square inches, respectively.

The honey taken from the 2-queen hives in 1919 averaged 189 pounds each, compared with 178 pounds each from the regular colonies. The yield from the 2-queen hives would have been higher had it not been for the fact that they had their queens removed at the beginning of the clover flow, which caused some loafing, while the regular colonies were kept from swarming by having their queen-cells destroyed every week.

The two queens were separated during the winter by a close-fitting thin division board, placed in the middle of the hive, so that actually two small colonies were wintered in each hive. One of these colonies was placed in a separate hive in late spring. The best time for making the separation was found to be early in the honey flow from dandelion.

The original plan was to prevent swarming during the clover flow and get the two young queens raised and established in the hive in two operations only, (1) the removal of the old queen—early in the clover flow, and (2) not more than ten days later the destruction of all the queen-cells except two left or given as ripe cells raised from selected parentage, one on each side of the division board then inserted. Fixed in front of the hive was a special portico which separated the outer entrance for each queen by about ten inches. The result was that a considerable proportion of the colonies had both queens safely mated.

A large number of young bees for the winter were raised by the two young queens and the number of the colonies was increased from year to year. There was no swarming before the clover flow, because the colonies were not then strong enough to swarm.

In 1920 an improvement was introduced which consisted of treating only those colonies that showed that they were preparing to swarm by having larvæ in the queen-cells. In this way honey production was increased further, but the number of hives having two queens for the winter was reduced. This made the system applicable to places that have less favorable spring conditions for the colonies to build up because the weaker colonies were strengthened with brood from the stronger. The colonies were examined every eight or nine days for queen-cells, but it is believed, as a result of the 1920 experiments, that a 10-day period would be better, both for repeating the examinations and for the destruction of the queen-cells after removal of the queen, especially if, as a precaution against swarming, the queen's wings have been clipped. As ten days is also the time it takes for a batch of queen-cells to become ripe from the time of starting, the apiary need be visited only once in every ten days during the swarming season, which is satisfactory for outapiary work.

1920 was a poor year for honey at Ottawa. From eight hives, in which two queens were wintered, in four of them an average of 75 pounds of honey were taken, against 68 pounds from six regular colonies.

The above experiments were carried out with hives containing ten Langstroth-sized frames. Much better results were obtained in 1920 from two 10-frame Jumbo hives, strong in bees, wintered outside in a 4-colony case with two queens each. They each produced an average of 147 pounds. This was more than double the production from the regular colonies in 10-frame Langstroth hives.

Further developments foreshadowed are (1) the introduction of two young queens mated in nuclei in place of the two queen-cells in treating some of the colonies, including all those that are treated late, and (2) not inserting the division board until fall, when five of the combs are removed, and another colony, reduced to five combs, is placed on the other side of the division board. This latter plan reduces the system to a method of halving the space occupied by colonies in winter, so that, in wintering outside, each 4-colony case will hold eight colonies, and in cellar wintering only half the number of hives are brought into the cellar. This is a good plan where no increase is desired. The advantages of wintering two colonies in one hive in the cellar have been discussed at length by the late Dr. C. C. Miller in his book, "Fifty Years Among the Bees." This author says that if he "had not changed from 10-frame to 8-frame hives" he "would have continued the practice."

Wintering two queens in one hive as a regular system can hardly be recommended to beginners, nor for localities in which the main honey flow follows soon after the commencement of swarming, but the success of the experiments at Ottawa indicate its possibilities in the hands of experts where the spring conditions are favorable.

The experiments show that there is no difficulty in wintering two queens in one hive when the bees accompanying each queen cover four or five combs. Not one of the double colonies was lost, even including two 10-frame Langstroth hives wintered outside in a 4-colony case. The great value of a few spare young queens in spring and the difficulty there is in procuring them when required and in good condition, and in introducing them safely, makes it very desirable that moderately weak colonies containing young queens, instead of being united in the fall, should be placed, in pairs, in hives separated by a close fitting division board, so that both queens may be saved. Every beekeeper should have a few of these division boards for this purpose.

Canada.

Bitterweed.

## WORKER BEES IN DRONE CELLS

By Edward A. Winkler

Question.—Some time ago I neglected to put enough frames in a colony of bees and they filled the space with a comb of their own, but it happened to please them better to build drone-comb.

I ran across it several days ago and cut it out and threw it in the honey house. I was surprised to find it covered with young worker bees this morning, when I thought it was drones.

If you examine it you will find worker bees in drone cells. This is something I have never seen before and may explode some of Darwin's theories. Illinois.

Answer.—No. This will not damage any of either Darwin's of Dzierzon's theories. We have seen queens lay worker eggs in drone cells when they had no other cells at their disposal. This experiment was made by supplying a hive of bees with all drone-comb. But, in that case, the bees narrowed the mouth of the cells to worker size. It was perhaps done in this instance also. However, it would indicate a young queen, for old queens do not have so much repugnance to laying in drone-cells as do young queens.

Huber, who lived before the Dzierzon theory was advanced, and wondered how it was that an unimpregnated queen or a worker could lay eggs that would hatch, had noticed that a young queen rarely lays any drone eggs before she is at least 11 months old. He thought that the male and female eggs came in turn, and often wondered how a queen could tell when the eggs that she was about to lay would be drone eggs. All that was explained by the Dzierzon theory of parthenogenesis, to the satisfaction of the scientists.

However, your experience, in this matter, is quite interesting.—Editor.)

## PEOPLE IMMUNE TO STINGS

By J. H. Tichenor

I have just finished "eating" the book, "The Dadant System of Beekeeping." It is practical common sense. No one can read it and think just the same as before. It will change his ways for the better. There is just one thought presented in it with which I differ, and I deem it of so much importance that I feel in duty bound to mention it. The writer seems to convey the idea that there are persons immune to bee stings.

During my lifetime of 58 years, I have known at least four or five of those sting-proof people who came near losing their lives by stings. I have, therefore, concluded that it is not best to get anything in print that might lead to carelessness in handling bees.

Wisconsin.

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## THE EDITORS' VIEWPOINTS

### Everlasting Beehives

An Italian beekeeper, Carlo Caldarelli, has invented a hive, made in double walls, with air space, which he has patented and which seems to be made of asbestos cement, apparently similar to the Johns-Mansville roofing shingles. He calls it "L'arnia di eternit," the hive of eternity. Undoubtedly such a hive would last many years and wear but little. Whether it would be suitable for a climate as changeable as that of North America remains to be ascertained. The following advantages are claimed for it:

It is a better non-conductor of heat and cold than wood, though not so good as cork; it cannot burn up, and resists heat well; it stands moisture, withstands frost, and it is practically unbreakable. The price per hive is 135 lire, which, at the present exchange, would figure about $6.60. The material is very thin, only about 4 millimeters, but the dead air space, which might be filled with non-conducting material, helps in the insulation of the walls. As wood is very high priced in Italy, this hive may succeed, if faults do not develop.

### Lavender Sticks

We are in receipt from Mr. Wm. Mahler, Lafayette, Ore., of two very pretty "sticks," made by his "missus." They are made of a couple dozen lavender stems, intertwined with blue ribbons and red cord, giving a very pretty effect. The odor is exceedingly sweet and we can readily understand the use of lavender in linen drawers, especially in this shape. Since the lavender is recommended as a honey producer, it may be worth while to cultivate it.

### Unedited Letters of Francois Huber

I had for many years the desire to engage in the translation into English of the "Unedited Letters of Huber." Mr. Ed. Bertrand, who published them in the original French, in Switzerland, in 1891, often urged me to undertake this. But the task was great and I did not have the time to spare. I have at last accomplished it, leaving out only such letters as contained repetitions or were uninteresting to beekeepers.

Is it necessary to mention the great value of Huber's observations? Very few beekeepers have failed to hear or read of the great naturalist, whose "First Observations on the Natural History of Bees" were published in the English language in different editions, from 1806 to 1841. He enriched the public mind with a number of observations, very few of which have proven incorrect. He is quoted favorably by most of our leading apiarian teachers, and, to mention only those leaders who wrote in English, we find him praised by Bevan, Cook, Alley, Cheshire, Cowan, A. I. Root and, above all, by Langstroth, who called him "the prince of apiarians." Even his antagonists have added to his fame. Huish, whose work on bees was published in London, in 1815, and who was therefore a contemporary of Huber, ridiculed Huber's experiments and observations and called them "absurdities." Huish denied things that Huber had proven, he denied that the queen was fecundated in the air, on the wing; that wax was produced by the digestion of honey; that pollen was used to feed the brood, and many other facts which are now well proved. So Huber has remained as one of the leading lights of modern beekeeping, while Huish is well-nigh forgotten.

Since the "Unedited Letters" were gathered together by our late friend and published by him originally, we believe it is well to begin by publishing his "Introduction," as given in presenting the Letters to the public. This was done in 1897, and the Swiss edition was exhausted long before the death of Mr. Bertrand. We will publish these letters from time to time, as occasion offers, in the Journal.

Our readers must not expect anything positively new, in natural history, through the publication of these letters. But they will see the habits of bees under a new light and will perhaps recognize discoveries which they know now but faintly. Huber's style was delightful and I hope I may have retained some of this delight in the translation.

C. P. Dadant.

### Organization

The beekeepers of the United States probably lead the world in honey production, but not in organization. Read the statement of "L'Apiculteur Alsacien-Lorrain" on beekeeping in the liberated provinces:

"Nearly all the beekeepers of the liberated provinces are grouped in the branches of the Society of Beekeeping of Alsace-Lorraine. This numbers at present about 12,000 members, who own about 80,000 colonies, nearly all with movable frames. The average crop is of about 10 kilos (22 lbs.) per colony, or 800,000 kilos (1,700,000 lbs.) annually.

Beekeepers of America, if you want to achieve anything in the sale of your honey, you must be united, as these people are. But thus far, the beekeepers who belong to associations, in this country, are only a small minority. We need better organization. Don't fail to join the leagues of honey producers. They will be efficient only in the proportion that their membership will hold to the total number of honey producers.

### A Bee Paper for South Africa

We have before us the first two issues of the South African Bee Journal published in April and May.

This journal is the official organ of the South African Beekeepers' Association, whose official address is Box 6057, Johannesburg. The magazine promises to be of great help to the beekeeping industry there.

### Nuclei by Parcel Post

An advertiser of bees and queens calls our attention to the fact that he is urged by customers to send nuclei by parcel post. This he is unable to do, since postal regulations are very explicit that only queens with attendants in the regulation mailing cages and bees in packages **without combs** and with double wirecloth sides may be admitted to the mails.

The fact is that probably a good many such nuclei have been sent by parcel post through lack of knowledge of the rules on the part of the customer, the shipper, and the postmaster.

This infraction of the regulations should be done away with. We are likely sometime to have such a nucleus broken open in the mails with much damage done and a consequent liability of the shipper, endangering the whole business of shipping package bees by parcel post.

Certainly the time should come when nuclei may be admitted, but until such a change is made, we had best abide by the regulations.

### Honey Versus Sugar

Concerning the comparative value to the human body of sugar and honey, which is discussed by Dr. Carton in his "Treatise of Medicine, Alimentation and Hygiene" quoted in the present number, it is well to remind the readers that Dr. C. C. Miller, who lived to his ninetieth year, in full use of all his faculties, used no sugar, and sweetened his coffee, tea or other drinks, with honey instead of sugar. There is no doubt that the sweet of the blossoms, as produced by nature, is superior to our artificial sugars, although cane and beet sugars are very much superior to the corn syrup made by the chemical action of sulphuric acid upon starch. We should use more plentifully of honey and advise all our friends to do the same, knowing that we are thus to secure better health and longer life. Pure honey contains the most fragrant and delicious, as well as the healthiest properties of the vegetable kingdom. Think of manufacturing milk by some chemical process and expecting it to be as healthful as that which is produced naturally in the udder of the cow! The milk of our cows is an essence distilled from the sweet plants of our pastures, by Nature. To quote a noted French songster: "Milk contains more science than all the books of the metropolis." Similarly, is not the honey, gathered by our bees, distilled from the sweetest blossoms by a process that no chemical invention can ever imitate successfully?

### A German Bee Book

Through the courtesy of Professor Alfonsus, of Vienna, we have received the book, "Unsere Bienen," by August Ludwig, the second and complete edition of which was published in Berlin in the late Autumn of 1920.

Written by so eminent an authority as Pfarrer Ludwig, who is one of the instructors in beekeeping of the Zoological Institute at the University of Jena, the volume makes a very valuable addition to our library.

The book, comprising 760 pages in all, with 474 illustrations and 28 plates, part of them in colors, is divided into two parts, the first dealing with the Science of Beekeeping and the latter with Beekeeping Practice.

Chapters considered in the first part are briefly as follows:

1. The Significance of Beekeeping.
2. Hypothesis for Successful Beekeeping—Honey Plants, Climate, Weather, the Beekeeper Himself.
3. History of Beekeeping from the Ancients to the Present Day.
4. Writings on Bees and Beekeeping.
5. Bees in Fiction—Customs and Folklore.
6. Natural History of the Honeybee—Races of Bees, Comb-building, etc.—Diseases and Enemies.

The second section, dealing with Practical Beekeeping, comprises 416 of the 760 pages of the book, and has for its chapter subjects the following:

1. The Beehive.
2. Tools for Beekeeping.
3. Care of Bees.
4. The Bees' Products and Their Profitable Harvest.
5. Bookkeeping in Beekeeping.
6. The Bee Association, Its Function and Duty.
7. The Beekeeper's Rights and Laws on Bees.
8. Instruction in Beekeeping.

We Americans are undoubtedly in the front rank in beekeeping practice and more especially in profitable management of bees on a large scale, but many of our European contemporaries have done more detailed work, especially in the natural science of beekeeping, as is evidenced by the above mentioned work.

Nor is the study of the practical side neglected by them, although possibly not put into use according to our ideas. We find nearly every type of American hive described, illustrated and discussed, in this volume.

A valuable addition to the library of any beekeeper having a working knowledge of the German language.

### Wisconsin Bulletin on Foulbrood

Bulletin No. 333, of the Agricultural Experiment Station at Madison, Wis., 24 pages, 9 half-tone engravings, is before us. It has for its title "How to Control American Foulbrood," and was written by Prof. H. F. Wilson, who is in charge of bee investigation and disease eradication at that University.

The bulletin begins by giving appearance and symptoms of European and American foulbrood, and of sacbrood, and continues with a more complete description of American foulbrood, its eradication and cure.

Warnings are given to avoid buying brood combs unless sure of their safety, and of the necessity for disinfecting by boiling in hot lye all second-hand equipment. In eradicating the disease, bees should be brushed instead of being shaken, and this should be done in a honey flow.

Extracting combs removed from a foulbrood colony should not be used again, though apparently safe and dry. Experiments made show that there is a 25 per cent chance of reinfection from this source

Nor does Prof. Wilson deem it advisable to use the plan adopted by some of leaving one dry comb in the hive to catch the infected honey, the same to be removed the next day. He argues that by that time the bees may have drawn out foundation and may transfer some of the honey from the old comb to the new ones.

### Bulletin on Swarm Control

Farmers' Bulletin No. 1198, of the U. S. Department of Agriculture, has for its title "Swarm Control." It comprises 48 pages and was written by George S. Demuth.

Designed for general distribution to all keepers of bees, it is not only a manual of instruction, but a thorough discussion of the underlying principles governing swarming and swarm control as well.

The desirability of swarm control is self-evident to the experienced beekeeper. The reading of this bulletin should make it so to the novice.

Although the causes of swarming are not definitely known, some of the factors influencing the tendency to swarm are:

1. Hereditary influence through lack of breeding from desirable stock.
2. Wrong size and shape of brood-chamber and poor combs.
3. Improper distribution of bees within the hive. Mr. Demuth outlines some of the most important considerations in swarm prevention measures as being: selection of stock in breeding, large brood-chambers, good worker combs, free expansion of the brood nest in spring, wider spacing of combs, deep spaces below the combs, large entrances and additional ventilation if necessary, proper shading, prevention of building of barriers of sealed honey in the brood nest; inducing bees to occupy supers, and empty combs for the ripening of incoming nectar.

A part of the bulletin is devoted to instructions in case of swarming, relation of prime swarm and afterswarm to the parent colony, and manner of treatment to anticipate swarming.

The text is illustrated with several drawings, mostly showing different arrangement of hives and supers in hiving swarms and in swarm control.

### Boost Your Local Sales

Questionnaires sent out by the Texas Honey Producers' Association reveal the fact that only two per cent of the honey of members is sold locally. Probably a condition which is general through the country, and especially in the larger producing districts. Surely there is no good reason why this could not be increased five fold with a little effort in stimulating local sales.

### Northern Ontario

The editor of "L'Abeille," of Quebec, Mr. C. Vaillancourt, gives in this magazine a description of the Abitibi region, located about 200 miles north of Georgian Bay, which he reports as a fast growing settlement in which clover grows abundantly. This is a newly settled region, the streams of which run towards James Bay It is said to produce the willow-herb or fire-weed in large quantities.

### Conventions

Perhaps fifty conventions of beekeepers have been held within the past thirty days. Not many years ago a bee meeting was sufficiently rare to be worthy of extended notice in the magazines devoted to honey production. Now it is impossible even to give the place and date of them all. Hardly a day passes without such a convention being held at some point on the North American continent. This indicates a better state of the industry. While from the census we learn that there are less people keeping bees than was the case formerly, there are more specialists, and it is the specialist who develops an industry. We learn much from each other, and the personal contact at these meetings, large or small, adds much to the interest as well as pleasure of one's work.

### Lime Soil for Sweet Clover

At the Chippewa Falls meeting, Dr. Phillips made it clear that a soil containing plenty of lime is absolutely necessary to produce sweet clover freely and that this plant is not a good honey yielder in any soil but a lime soil.

# THE PACKERS' PROFITS

## Notes on the Cost of Packing and Selling the Honey Crop

## —By M. G. Dadant

MORE and more, in these days of reconstruction and of revision, we hear criticism of the jobber, of the wholesaler and of the retailer, and an urgent demand everywhere for the elimination of the middleman.

Before discussing specifically the case of the honey producer and honey seller, a frank elaboration upon the "middleman" seems advisable.

In the earlier days, the middleman was a negligible quantity. Either the head of the family produced all the family required or else he bartered with his neighbors—a case of from producer to consumer. By and by, modes of travel and of intercourse were established, the bartering became more general. By gradual development we came to a period when the head of the family depended for many things upon exchange with neighbors or with distant peoples. This was true as far back as the time of the Phoenicians, a flourishing people, devoting their time to trading along the shores of the Mediterranean and even in the countries of northern Europe.

Eventually was evolved the present period of specialization, where many men spend their whole lives in one single pursuit, exchanging the result of their labors for commodities produced by the labor of others, in this country or in far-away foreign lands, with middlemen to execute the exchange, trading coffee for honey, or shoes for raw hides.

So specialization means middlemen, and the greater the specialization, the more middlemen required, most certainly with all the opportunity for incident evils, but not without compensating advantages.

Moreover, the more middlemen, jobbers, brokers, wholesalers, packers (or whatever you are minded to call them), we can interest in the handling of a given commodity, the greater the competition among them, the less profit they will take and the better distribution they will give us. Arguing on this basis, and for our own selfish interests, we should encourage occupation of as many middlemen as possible in distributing such a commodity as honey. Not that it is better for the distributor, but rather that it is better for us, the producers, or the consumers. They bid up on buying, they attempt to underbid each other on the selling.

If each individual producer endeavored to sell his own products direct in these days of specialization, he might succeed if his output were small, but, with more than he could dispose of locally in a small way his costs of marketing would become excessive, in fact far above those of the individual who made a business of trading. The smaller producer may dispose of his crop, the larger must leave the sales to a class who devote their entire time to it.

The mere fact that there are profiteers among the jobbers, etc., should not blind us to the fact that we cannot do without the whole class. The profiteer should be eliminated, and I believe that this is appreciated as much by the honest and conscientious middlemen (who are in the large majority) as by the producer and the ultimate consumer.

Turning now, more specifically to honey and honey prices, I have been fortunate in getting from the different honey packers, figures on the items that enter into the retail price of honey—what proportion of the retail price paid goes to the producer, how much is distributed along the road to the handlers, how much for labor, freight, containers, labels, leakage, losses, etc.

An average of these figures, which were slightly variable, but in all cases within comparatively close range, is shown in the accompanying table:

| Size of Package | Honey Cost 10c Lb. | Materials Cost Package Case Labels | Overhead Packing, Selling, Office Factory loss of Honey | Packers Profit 6% of Ultimate Price | Jobber's and Wholesalers Gross Profit and Ft. | Retailer's Gross Profits and Ft. | Price to Ultimate Consumer. |
|---|---|---|---|---|---|---|---|
| 6 oz. jar | 4.5c | 3.6c | 2.7c | 1.1c | 1.8c | 4.3c | 18c |
| 16 oz. jar | 10c | 6c | 8c | 2.4c | 4c | 9.6c | 40c |
| 2½ lb. can | 25c | 7c | 10c | 4.2c | 7c | 16.8c | 70c |
| 5 lb. pail | 50c | 12c | 10c | 7.2c | 12c | 28.8c | 1.20 |
| 10 lb. pail | $1 | 22c | 13c | 13.5c | 22.5c | 54c | 2.25 |

In all instances, in order to get a working basis, honey at 10 cents per pound, f. o. b. packer's station, was used. Cost of packing materials are fairly constant and vary only with the distance of packer from his source of supply.

The item of overhead, including as many items as it does, and based on specific cost sheets, though large on the larger packages, is well within reason, as is the packer's charge of 6 per cent profit.

There only remain the profits of jobber and retailer, which alone make up 34 per cent of the whole. These do look large. Bear in mind, however, that these are gross profits, from which must be deducted freight, handling, damage, delivering, interest, etc. One point which might go to show that these two classes are not getting an excess is that so very few wholesalers and retailers handle honey. Were the profit excessive there would be an inducement to push honey rather than other syrups. The reverse is usually the case. Why? Is the margin of profit larger in other syrups? Possibly it is the cheaper price. More likely it is the better distribution and the better advertising. The syrup people spend millions on advertising. How much has been spent on honey?

The small individual honey producer will assure us that the prices figured are too high, that he can sell cheaper. But can he afford to sell cheaper? Has he figured his costs? What does he charge for his time? If he sells 500 pounds of honey in 10-pound cans, can he put it up as cheaply as one who cans honey day in and day out with modern equipment? There are many items which the small producer will avoid, but will not his heavier expenses for containers, selling, etc., offset this, if figured on a real cost basis?

The farmer no longer butchers his hogs and cattle to sell. He cannot afford to. His distribution costs would be too high. He specializes in production.

What, then, can be done to stabilize the sales of honey? Wherein is the present honey-selling industry suffering?

In the first place, there is a lack of co-operation. Not only is this true as between the individual beekeepers, but also as between the producer and the honey packer and honey seller. I may be selling my honey in 10-pound cans at $2.25, whereas my neighbor sells for $1.00. I may be selling at $1.50 while the packer will have to ask $2.50 to make a normal profit.

Under these circumstances honey sales are bound to suffer; the consumer who buys my neighbor's honey

HONEY
HONEY
DADANT & SONS
HONEY
HONEY
HONEY
HONEY
DADANT & SONS

Friction top pails, attractively labeled, make ideal containers for local sales.

at a low price, even though poorly put up, is less apt to take mine later if the price variance is so great. The same is true as between the producer's and the packer's brands. The result is that the market will likely be bare during a portion of the year, the higher price honey seeking a market where the cheap competition is lacking.

Co-operation should tend to establish an approximate uniform price—competitive, of course, but near enough so that a lack of supply of honey of one source could be offset by fresh supplies from another source, thus keeping the market constantly supplied.

We lack advertising—publicity. How much does the average person know about honey? How many even know that there is such a commodity as honey available? Advertising costs money, but we must agree that it brings results. How else can we justify the enormous outlays represented by only one month's publication of our national magazines? I venture the assertion that an outlay of one cent per pound for honey advertising would enable an increase of four cents per pound in the selling price of honey, if indeed the beekeepers were able to supply the demand.

Thirdly, we lack distribution. Many communities now would buy honey were it available. One town may be so well supplied that no outside honey is required. In a neighboring town, either there may be no local beekeeper, or else he sells all direct to the jobbber and the town is honey dry.

Possibly, also, the honey industry is suffering from lack of specialization. Might it not be better to devote our whole time to production, as the beef cattle men do, and leave the packing, advertising and distribution to the middleman? We would suffer periods of depression, as the cattlemen do today, but we would get national distribution.

In conclusion, there are three ways open. We may go on as before, some cheapening the market by selling low, others endeavoring conscientiously to hold it up to a normal level; the packer grabbing what he can under the circumstances; or we may ignore the packer altogether, co-operate and handle as a class, all of our own production, advertising and distribution; or we may, last of all, co-operate as between ourselves and as between producer and jobber—sell all we can at a good stiff average price and urge the jobber to get in where we leave off, aid and, if possible, duplicate his advertising, further his distribution and encourage as many of them as possible.

To my mind, under present conditions, the last road is the proper one.

## THE IDEAL BEE

By John Prothero

American textbooks, published in recent years, seem to take for granted that the Italian bee has established its reputation as the best. They appear to regard the matter as finally settled. Several pages are usually devoted to praising this race and advocating universal Italianization; the others are cursorily mentioned and dismissed. Superiority is claimed in nearly every quality and attribute of bee excellence for the Italian, and statements are made which many foreigners would challenge. There is a strong probability that the strain found best in Florida would not be best for high altitudes in Montana and Idaho. May not the excessive swarming propensity of Carniolans be due to placing Alpine bees on hot plains? Does not the whole question require revision?

As in all live stock, there is an ideal bee, the type which shall combine the good qualities of all known strains. Of course, we shall never produce it; it will remain an ideal; but, in pursuing it, we shall undoubtedly arrive at a better bee. The process should be that which is best exemplified in modern poultry breeding. We want to breed certain qualities into one strain from another. In making this cross, we introduce some undesirable qualities, which we then proceed to breed out again. It is a long business, with many intermediate stages, and throw-backs will insist on breaking out just when the final result seems attained.

I was once consumed with an ambition to originate a new breed of dog, the Dalmatian-Dachshund. Dalmatian coat on Dachshund figure, a long, low, lizardy creature, white, dabbed with black spots, like raisin bread. Everybody to whom I mentioned it showed the utmost enthusiasm for the project and hastened to bespeak the pups. Other interests supervened, and the D. D. never materialized; it has remained an ideal. I am now advocating a less showy but more useful experiment in cross breeding.

Tall-16 oz.
Capacity 16 oz.
Screw Cap Jar.

Poultry breeders have done marvels in producing new and improved strains. Perhaps Darwin, with his patient experiments in pigeon variations, pointed the way for those who, without any theory to prove and with purely material objects in view, have originated breeds combining the qualities of several older ones and moving towards an ideal type. Generations follow one another so rapidly that much can be done within the span of a few years. The poultry men have shown beekeepers what can be done and what ought to be done.

Ah, but the drone difficulty! The drone is certainly a difficulty, but he does not amount to an impossibility. The solution lies in isolation. A ring of outapiaries, making a rough sort of circumference to a central queen-yard, is usually a sufficient insurance. There are islands available, too, though this would be more a task for the Department of Agriculture than for the individual breeder. Still, we must not wait for the happy day when a generous appropriation will maintain an isolated queen yard, devoted to the production of improved bees. Mr. Barratt, of Sheffield, England, has produced some startling results by means of hand fertilization, but this is never likely to get beyond the stage of interesting experiments by experts. The breeder will have to do his best and risk the drone.

Breeding, up to the present, has been confined to the improvement of particular races. Penna, Piana and Bozzalla are developing the leather-colored Ligurian, the dingy cousin of our bright Italian bee. Jan Strgar is developing perhaps the most promising material in the world, the Carni-

HONEY
HONEY

The parcel post package is as yet little appreciated.

olan bee. The Swiss are devoting themselves to the black Alpine bee; the British to the brown Dutch; and there are breeders in Egypt, Cyprus and elsewhere, producing queens of native stock.

In this country queen-breeding and selection have been carried to an extent and a nicety of practice unknown elsewhere, but little has been attempted, as yet, in the province of hybridizing. The rage for bright golden color seems to have died down, and the Italian three-bander is the bee of the moment. I have been one of those bee-fever patients who try everything going. I have handled at least ten American strains and, in addition, Carniolans and blacks. I am by no means satisfied that the best strains of three-banded Italians cannot be improved. I have never handled any Italian strain whose temper, throughout all seasons, could compare with that of the Carniolans, nor whose power of building up rapidly in chilly spring weather could compare with theirs. I have handled a strain of black bees which never did anything that the textbooks say they do. Their deportment was always calm and sedate. They were early abroad, and did not sulk in cool, cloudy weather. The Carniolans were worse swarmers than even the textbooks foretell—in early summer—but afterwards settled down and did marvels. Their bad point, I should say, is that the fuss they make, when swarming, upsets Italians in the same apiary; they corrupt respectable neighbors with their mania, but do not communicate their virtues. The blacks were the equal of any Italians I have handled, and were conspicuous non-swarmers, but their queens were hopelessly invisible. Yet I feel sure that Carniolan temper and fertility and black hardiness will ultimately be among the attributes of the ideal bee.

The first task should be to breed the Carniolan temper into the Italian three-bander until it becomes constant, and color bands remain invariable—until you get a permanent hybrid, and not a mere cross. Then, should this hybrid show swarming fever, get rid of it by selection, or by a further admixture of Italian blood. There will remain an interminable vista of further tasks confronting the breeder, but this first step, that of introducing the temper and fertility of the Carniolan into the present American-Italian, is one that should allure amateur and professional alike, for it will mark an undoubted stage in the advance towards the ideal bee.

Virginia.

(The greatest fault we find with the Carniolan is its lack of definite markings. A slight mixture of them with the common bees is impossible to distinguish, while the slightest mixture with the Italians shows itself at once. But our correspondent is certainly correct in saying that the strain suited to Florida might not be the best for high altitudes. We have tried practically all the different races, and by all means prefer the Italian.—Editor.)

## UNEDITED LETTERS OF HUBER

### Introduction

By Edouard Bertrand

The "New Observations upon bees" of Francis Huber make very interesting reading. When I resolved to read them, however, I did not anticipate the intense pleasure which they gave me.

Indeed, if there are still literary productions of the late eighteenth century that are read, we know in how small a proportion. Hardly one book in ten thousand has withstood the test of time. What a lesson in philosophy and what a menace towards the future of our contemporary works! Concerning works of science this proportion is still more disastrous. Everything has changed, everything has been perfected in so speedy a manner that the recital of information dating back a century generally offers no interest for us. From the enormous accumulation of scientific works of that time, there are few capable of instructing us yet; and they are nearly all on Natural History. Among this elite, the "New Observations" of Huber shine with a particular eclat, with an ensemble of qualities so harmonious and original that we would seek them vainly elsewhere. The charm of a style which is always pure is allied with a very simple and yet very clever expose; the ingenuity of the observations is so extraordinary that one soon gives way to the sentiments of an aroused admiration for this blind man, whose genius was at all times equal to well-nigh insurmountable difficulties.

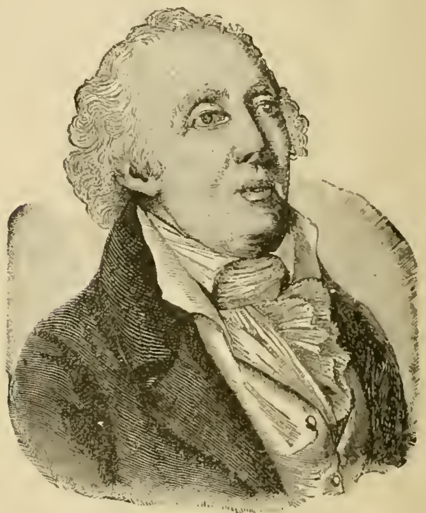
I.

Francis Huber, born in Geneva in 1750, died in 1831. * Note.

When he became blind he was engaged to a Miss Aimee Lullin, and this young lady was faithful to him, in spite of contrary advice which was given her. She was to be rewarded for it by the happiness of her entire life.

Huber narrates himself (New Observations, page 1) how he became interested in bees. He was fond of sciences and did not lose this fondness when he lost his eyesight. He had his servant, Francis Burnens, read to him the best works on physics and natural history. This man took great interest in these readings and Huber quickly noticed his wonderful aptitude as an observer. He resolved to cultivate this talent, and caused him first to repeat some of the most simple experiments of physics. These he executed with a great deal of skill, improving upon the few instruments that were intrusted to him, applying them to new uses and even making, himself, the implements which he needed.

"The continuation of our readings," says Huber, "having led me to the beautiful works of Mr. Reaumur upon bees, I found in his book such a fine plan of experiments, observations made with so much art, a logic so wise, that I resolved to study particularly this celebrated author, to shape my helper and myself at his school, in the difficult art of studying nature. We began by watching bees in glass hives; we repeated all of Reaumur's experiments, and we secured exactly the same results when we used the same processes. This agreement of our observations with his gave me great pleasure, because it proved to me that I could rely entirely upon the eyes of my helper. Emboldened by these first trials, we attempted to make upon the bees some entirely new experiments; we contrived the building of several hives, of which I had never thought, and which presented great advantages, so we had the good luck of discovering remarkable facts which had escaped the notice of Swammerdam, Reaumur and Bonnet. It is these facts which I now publish in this work; there is not one of them that we did not try several times over, during the eight years in which we made researches upon the bees."



Huber, the blind Naturalist

This modest expose retains surprises for the reader, for it does not give a presentiment of the importance and of the difficulties of the researches which followed.

Francis Burnens was not only an intelligent man, he was gifted with great tenacity. He often would follow, for 24 hours, without food or rest, the actions of a few worker-bees

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Note—His father, Jean Huber, had the reputation of being one of the wittiest men of his time and was often cited by Voltaire, who appreciated his conversation; he was a pleasant musician, wrote poetry which was even praised in the Ferney drawing rooms, was known for his quick piquant rejoinders, was an easy and talented painter, excelled in the art of cutting out paper landscapes in such a manner that he appeared to have created this method, carved better than an amateur sculptor, and to these talents he added the taste and art of animal study. His work upon the flight of birds of prey is even now referred to with profit by naturalists. Jean Huber transmitted most of his tastes to his son. (From the notice of P. A. De Candolle upon Francis Huber.)

which he suspected of being fertile, in order to detect them while in the act of laying. Once, even, he spent 11 days examining the bees of several colonies, one after another.

Huber directed the experiments and devised them so as to retain the control. Nothing is more interesting than this association, which lasted too short a time, for in 1795 Burnens left him to live at Oulens, where his fellow citizens, aware of his capacity, made him a magistrate.

On the other hand, he did not cease his bee work, and from time to time he replied to the requests of Huber by additional experiments. I have had the good luck, through my friend Mr. Edw. Pictet, to publish one of those letters of Burnens, in answer to a question upon the sphinx atropos (Revue Internationale, 1885, page 85). A footnote of Huber, in communicating this letter to Mr. M. A. Pictet, of the Academy of Geneva, shows what sentiments Huber had towards Burnens.

"You will see that the writer of this letter has what is needed to become an excellent observer—good eyes and good logic. You will acknowledge that it is a pity that an instrument which I had sharpened be no longer in my hands. Burnens is justice of the peace at present (New Observations, Preface); he does not waste his time; his entire life is being spent in preventing his fellow countrymen from eating out one another's white of the eyes' and ruining themselves in law suits. I had not thought that my lessons would put him there. His observation is very important. It proves that bees, which contract the entrances of their hives when they are threatened with invasion, do not do it when it is unnecessary. It is therefore the circumstances which prompt them; they never make any mistake."

The first edition of the "Observations" on bees was published in Geneva in 1792. It contained a series of articles in the shape of letters to Mr. Bonnet, who had induced Huber to publish his notes. There was a reimpression published in Paris in 1796, in one volume in-12, to which was added a short, practical treatise on bees, anonymous.

A second edition was made in 1814, in two volumes. For the second, Huber, for want of Burnens, employed his wife, and later his son, as assistant.

Born in Geneva in 1777, Pierre Huber died at Yverdon in 1840.

This curious and beautiful work made the reputation of Huber and secured for him a membership in most of the academies of Europe, especially the Academy of Sciences of Paris. It also caused his being called at present the founder of modern beekeeping.

(To be continued)

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Note. Pierre Huber, the son, was himself a naturalist of merit, already known through his "Researches on the Habits of Ants," published in Geneva and in Paris in 1810, and republished in 1861. Here is the list of a few of the bulletins which he published in periodical works: "Memorandum on Divers Instruments of Physics and meteorology" (Society of Physics and Natural History of Geneva, Vol. 2). "Notice Upon a Migration of Butterflies" (Ditto, Vol. 3). "Memorandum to Serve Upon the History of the Caterpillar of Hammock) (Ditto, Vol. 7, part 1). "Relations of Ants with Lice and Gall Insects" (Brit. Biblith. of Science & Arts, Vol. 28). "Observations Upon Several Species of Bees" (Vol. 6 of the Linnean Society of London). An extract from this was published in volumes 25 and 26 of the British Library under the title: "Observations Upon Several Species of Bees Known Under the Name of Humble-Bees." "Letters Upon a New System of Meteorography" (Biblio. Universelle, 1828). "Letters Upon Aeronautic Spiders," (Posthumous article in Biblio. Universelle, 1866.

## HONEY HINTS FOR SMALL PRODUCERS

By Josephine Morse

There are a good many beekeepers who keep only a few colonies of bees and do not plan to increase their apiaries, but who do like to produce extracted honey and strain and bottle it themselves, thus getting the retail price for their product. In such cases the returns will probably not be sufficient, nor will it seem expedient for the limited amount of honey obtained, to warrant much expenditure for equipment.

An easy way to strain honey is by the gravity method, which works very well with the use of the Cooley can, a tall cylindrical can with a cover and a very efficient gate at the bottom. This can was originally designed for raising cream on set milk. Honey is run right from the extractor into the can, then "set" for a day or two (or to suit one's convenience) to let all the small particles of comb, etc., rise to the top. Then, to get it perfectly clear, it should be strained through any desired small strainer made of the fine wire mesh used in milk strainers, either directly into the final containers or, if one is busy at something else, run into larger ones, from which it can be bottled later. Not until all the honey but about 2 pounds has run out of the can does anything clog the strainer. Straining will be more rapid if the honey is in a warm place. The cans hold nearly 40 pounds of honey.

If the honey producer puts his honey on the market he will want it to look attractive, and so should have a neat little label for each container. The public likes to see honey it buys; therefore, it may be advisable to use some form of glass jar—at least until his trade is well started. When customers are fully acquainted with the quality and standard of the honey they will take more kindly to tin cans, of which the 2-lb. friction top can is a convenient size, and can be sent by parcel post or express with less danger than glass. A cheap grade of white paper, cut to completely encircle the can and come to within one-half inch of the top, is wrapped about the can and secured with a gummed honey label placed directly across the joining point of the two edges.

A well put up package has a distinctly favorable effect on the purchaser. Therefore, it behooves the producer, especially if he is his own middle man, to see that his product not only comes up to a high standard, but is cleanly and carefully prepared for market.

Massachusetts.

## AT THE FOOT OF MOUNT HELICON

(From "A Journey Into Greece," 1682.)

By Geo. Wheeler, Esq.

"After I had discoursed some time with this good Old Man, whom they esteem a Saint, I was conducted below his Garden, between it and the River, to another Hutt; where two other Caloyers live, and look to a Garden well planted with Beans and Pease; and another just by it, furnished with four or five hundred Stocks of Bees. A Place near as pleasant as the other above; being just upon the Banks of the River; which I esteem to be that which Pausanias called Heraclitus; upon supposition that some of the forementioned ruins are those of Bulis. The good Caloyer presently went, and took a Stock of Bees, and brought me a Plate of delicate white Honey-combs, with Bread and Olives, and very good Wine: To which he set us down in his Hutt, and made us a Dinner, with far greater satisfaction, than the most princely Banquet in Europe could afford us. For the Quiet and Innocence of their Life, the natural Beauty of the Place, the Rocks, Mountains, Streams, Woods and curious Plants, joyn'd with the Harmonious Notes of Nightingales, and other Birds, in whole Quires, celebrating, as it were, welcoming that forward Spring, to speak the truth, so charmed my melancholick fancy for a time, that I had almost Made a Resolution never to part with so great a Happiness, for whatever the rest of the World could present me with. But in conclusion, it prov'd too hard a task for me, so soon to wean myself from the World.

## LARGE HIVES FOR LOUISIANA

By Jes Dalton

We had a very peculiar streak of weather here lately. A continual rain one to four good showers a day and most terrific honey flow I ever saw, right in rainy weather.

Roads mostly impassable and swarming on a par with the honey flow, especially in 8-frame hives. I am working in a yard of 12 frame hives now and at present have not found a one that has swarmed or is trying to, and I am afraid over one-half my 8-framers will. I am of the opinion I will never buy or make another part to an 8-frame hive.

First time I ever saw a honey flow in a rain. Last fall we had a spell of beautiful sunny weather and a heavy bloom of honey plants and not one drop. It takes time to learn beekeeping in the South.

Louisiana.

# HONEY SELLING

## How M. V. Facey, in Building Up a Market for His Honey, Used a Corps of Small, But Effective, Mail Salesmen

By R. A. Franklin

Being an omnivorous reader, I frequently, out of pure curiosity, glance over the classified advertising columns in the various magazines on our reading table. In pursuance of this habit, I noticed in that section of the "Woman's World" this invitation:

> "SEND for price list of our select quality clover, basswood and buckwheat honey. Sample 15c. M. V. Facey, Preston, Minn."

As at intervals, over a period of several years, I ran across this same adlet, my curiosity was aroused as to just what sort of results justified such long-continued use of it, therefore, when a convenient opportunity came, I called upon Mr. Facey.

After our introductions were over, I remarked: "You seem to believe that it pays to use the classified advertising columns of magazines; at least I should judge so from the number of years that I have seen your name therein."

"Well, that's the way I got all I have. Yes, I should say that they do pay—pay well" he replied, a friendly smile lighting his pleasant face.

And judging from the appearance of his beautifully appointed home, in the little hill-bound village of Preston, it must have paid very well, indeed, so I asked how such a program of advertising was managed advantageously.

"Well," he began, "to get results, one must use judgment in placing these or any other kind of advertisements. For instance, right now I am not advertising as heavily as usual, because of the money stringency and the slackness of business in general.

"Advertising in the agricultural journals, usually one of my very best mediums, I have discontinued for the next three or four months. You see, when the farmers began holding their wheat and other commodities for high prices, I knew money would not be plentiful among the majority of them this summer, and—right now—I'm selling more honey to miners than to farmers."

"About how much honey do you sell in a year?" I asked.

"Well, between four and five hundred thousand pounds, usually."

"You certainly do not supply that amount from your own bees, do you?" I exclaimed, in amazement.

With an amused, though kindly smile, he said, "No, indeed; not a pound of it. I buy from producers and distribute direct to the consumer."

"Living in a small town, how did you ever happen to start in such a line of business in the first place?" was my next query.

"Oh, you see, I used to be a beekeeper. In fact, until about thirteen years ago that was my business in life. I began this sort of advertising to help dispose of the product of my own bees, and before very long I had more orders than I could fill. One dislikes to disappoint a would-be customer, so I took to buying honey to fill those orders. I had tried sending the money back, but people didn't like that very well either, so I bought more and more.

"And presently the business of buying and selling honey crowded out the beekeeping entirely; they don't mix very well. A beekeeper who cares properly for his bees hasn't time to administer a growing business. So I disposed of my bees and attended to my business."

"Do you get all your honey right around here, or must you go farther away to get enough to fill your orders?"

"About 150,000 pounds I get right here in the vicinity of Preston, and most of the rest of it within a radius of 150 miles. When I need to go beyond that radius, C. C. Clemons & Co., of Kansas City, and Hamilton-Menderson Co., of St. Paul, buy it for me in carload lots on a brokerage basis.

"Of course, most of my alfalfa honey comes from Colorado and much of my buckwheat honey comes from New York State, because there is where the best of its kind is made.

"I have even bought 80,000 pounds of honey in Cuba in time of extreme shortage in the home product, but Cuban honey is not very satisfactory to the trade—they don't care for its flavor. It's a nice clear, thick, white honey, too—but they don't like it.

"Clover and sweet clover seem to be the favorites, but the buckwheat and alfalfa come next, followed by basswood, locust, etc."

"In what part of the country do you sell the most of your honey?"

"Well, most of it goes to the East. Just now, Indiana, Virginia, West Virginia and Kentucky are taking the biggest amounts, though sizeable orders are coming from other parts of the East. Northern Minnesota, too, in and around Duluth, takes a large amount."

"About how many magazines do you use in your advertising campaign?"

"Usually I run ads in about thirty magazines, mostly ladies' papers and agricultural journals. I tried some in such magazines as the Cosmopolitan, but they didn't give very satisfactory results. The Farm Journal, The Modern Woodman and the Woman's World are three of my old standbys.

"Recently the Woman's World discontinued the classification of their advertising columns, and the results ceased to come as before, so now, instead, I'm advertising in Comfort, a magazine published in Augusta, Me.

"The Modern Woodman editor, too, got the idea that classified ads didn't pay, so wouldn't take anything but

The Facey home at Preston, Minn.

display copy. I didn't care to drop out of that magazine entirely, so I took a 21-line display ad. with them for a few months, but I didn't get one-tenth of the results I had from the 1-inch classified advertisement.

"So I wrote the editor, telling him my experience and discontinuing my use of their publication unless it should be decided to reinstate the classified advertising columns again; told him I'd rather pay double the old rate for the classified ad. He writes me that he's going to take the matter up with the Board of Directors, using my experience as an illustration of the greater value to the advertiser of the classified ad."

"How does the expense of this form of advertising mount up?"

"Take it the year through, I spend an average of between $225 and $275 a month for advertising. Right now, for the reasons I told you of, my advertising is only $175 per month, but I shall begin advertising as usual in the farm papers again in August or September."

"Do you make any concessions to dealers in the matter of price or territory?"

"Well, to a certain extent, yes. I give no definite territory to any dealer, but I do make a difference of 3 or 4 cents a pound in the price to them, because they soon buy in large quantities and do more or less word-of-mouth advertising for my products. Of course, if an individual residing in his vicinity wants to buy direct from me, he can do so, and equally, of course, dealers are expected to be fair to one another in not encroaching one upon the territory usually served by the other."

By this method, with an annual advertising outlay of only $3,000, Mr. Facey every year disposes of honey worth at a very moderate price estimate at least $100.000. Of course, some years its value is considerably more; some years it may run a few thousand less.

## HONEY AS SANITARY FOOD

By Paul Carton

Dr. Carton, a noted French physician, in his "Treatise of Naturist Medicine, Alimentation and Hygiene," a work of 924 pages, Paris, 1920, has this to say concerning sugars versus honeys:

"Preserves, syrups, fruit comfits, candies, sweet entremets, desserts, sweetened drinks and dishes are products in which one consumes, without knowing it, important quantities of beet sugar and oftener of commercial glucose (the worst of chemical sugars). The lovers of these sweets and dainties had best give thought to the grave risks they are taking in consuming large doses of all these substances; it will be wise for them slowly to lessen the quantity consumed and to eat them irregularly and only, as an instance, to make up for the want of fruits.

"However, an exception should be made in favor of honey or grape preserves (the juice of grapes reduced by heating, mixed with cut up fruits.) The preserves made with honey are sweet and do not have the tartness of industrial sugars. In small amounts they are better tolerated by diseased stomachs and by children than either sugar preserves or honey taken separately, because the addition of fruits attenuates or absorbs all traces of formic acid in honey. They are made by using a little more honey than fruit, in weight, and cooking the mixture a little longer than with sugar. They are less economical, but the increased expense will be compensated by a lessening of doctor and druggist bills.

"Honey. It is a diastatic and living concentrated sugar which, for healthy people, does not present the inconveniences of chemical sugars.

"Honey was known in the earliest antiquity. As early as the 6th Century, before our era, man sought to procure in great abundance this concentrated sweet, which supplied him with pleasant food at all seasons, and it was at that time that the first attempts at beekeeping were recorded. Later still, honey was much sought for; the Promised Land was the country of milk and honey. Honey was among the offerings made to the gods.

"Gathered by the bees in the corolla of blossoms, honey as we harvest it represents the product of floral nectaries, elaborated by the digestive secretions of the bee's honey sac and afterwards concentrated in the wax cells by evaporation obtained through the ventilation accomplished by this interesting insect.

"The final product contains 70 to 75 per cent of glucose and levulose; 0 to 10 per cent of saccharose, 1 to 1.50 per cent of dextrin and gums, 0.05 to 0.15 per cent of formic acid, about 0.80 per cent of nitrogenous substances, 0.10 to 0.80 per cent of mineral salts and 20 per cent of water. It also contains soluble ferments from the nectaries and from the digestive secretions of the bees, which saccharify the starches and dextrine and change saccharose into glucose or levulose. These soluble ferments united with other ferments cause honey to become richer and richer in glucose as it grows in age.

M. V. Facey, the honey man with headquarters in a small town in Minnesota. He built up a big mail business of $100,000 in selling honey.

"Honey, with its sugars still united with mineral salts, with acting diastase, with vital floral energies, is thus a living food and a physiological stimulant, the use of which should be much more expanded, for it is many times more dynamogenic and nourishing than chemical sugar. So, it should again be given the important place which it held in alimentation, before the discovery of chemical sugars. To sweeten moderately teas or entremets, cakes and culinary preparations, honey represents the best substitute for sugar.

"However, after showing the superiority of honey over sugar, it is important to mention that, although it is a valuable concentrated food for healthy people, it requires cautious use for sick people. For persons positively dispeptic or arthritic, it does not prove itself the ideal, easily assimilated food, the 'cure all' that people believe it to be. Its laxative qualities are even unexistant in most cases. It would be a mistake to prescribe it to people of debilitated digestion and to praise it without discernment. There are restrictions which it is of universal interest not to conceal. For individuals with frail digestive organs, with whom all energetic concentrations are injurious, it may cause the following troubles: fermentation and burning at the stomach, lowering of appetite, heaviness, constipation, epigastric pains, congestive flushes of the face, itching and skin eruptions, insomnia, etc.

"Although it is an excellent food for normal people, honey is undoubtedly too strong for many sick people. The slightly ill, who cannot give up sweets, should prefer honey to sugar, taking it diluted or in preserves, or, better still, in gingerbread, prepared with real honey. In the latter case, the adjunct of rye flour renders it more readily assimilable and we have seen a number or dyspeptics who could not use honey in the natural state, digest it well in the shape of small doses of gingerbread (about an ounce) taken each day, during years when fruits are scarce, lacking in sugar or too acid.

"Let us add that honey eaten with bread is digested more easily than when taken alone, and that, for frail people, mild white honey, purchased directly from the beekeeper, in order to avoid possibility of adulteration, is much to be preferred.

"It is useful to learn that honey may be more or less successfully digested in different years, by the same patient. When the season has been rainy, with but little sunshine, and alimentary values are low, honey gives less irritation to the fatigued viscera. It may then be given in small doses to people who ill-digested it in hot seasons, especially as, at such times, its use is valuable to make up for the natural low value in sugar of fruits and to furnish the material needed for muscular work.

"The variations in the composition of honey from one year to another have even been found in chemical analysis. In 1911, a very dry year, the proportion of glucose in honey rose to 72 to 74 per cent instead of the usual 65 to 68 per cent."

Paul Carton.

(The reader will note that the natural glucose in honey is entirely different in its properties from the artificially manufactured glucose produced by the action of sulphuric acid upon starch, which the above writer condemns in the beginning of his article.—Editor.)

## CURING CHRONIC RHEUMATISM WITH THE STING OF BEES

By J. R. Schmidt

That rheumatism can be cured by the sting of the honeybee is the firm belief of George Renner, of Cincinnati, who is taking this novel treatment to eradicate the disease from his system. Each Wednesday and Sunday morning Mr. Renner visits the apiary of Fred Muth and submits to being stung by the honeybees. At first, when Mr. Renner could just hobble along with the aid of crutches, as high as ten stings were the strenuous treatment, but now Renner can walk without the aid of a cane, and only two stinging bees are applied twice a week. This novel treatment, painful as it may seem, is a welcome relief for the incessant pain of the rheumatism.

"At first the sting of the bees was very painful to me and the swellings resulting from the stings were great, but as my system gradually became inoculated with the poison from the stings the pain and swelling grew less in proportion. I can now take the stings without flinching and feel very little pain at all. It certainly is curing me."

Fred Muth explains the strange cure this way: "It is a well-known fact that the sting of the honeybee is made painful by the formic acid which enters the wound when the bee stings. This acid is contained in a tiny little bag attached to the thick end of the stinger. When a honeybee stings, this little bag of acid and the surrounding muscles break away from the body of the bee and the bee flies away and dies, while the sting propelled by the adhering muscles, sticks into the flesh and keeps on imbedding itself deeper and deeper, at the same time pumping the formic acid into the wound. Physicians have found that formic acid counteracts rheumatism, and when introduced into the system, in many cases, causes a cure. Allowing one's self to be stung by the honeybees is introducing formic acid into the system, which in turn counteracts rheumatism."

Ohio.

Fred. Muth applying the stinging bees to Renner's arm.

## THE CHINESE BEES

By B. Grudnoff

I made my first acquaintance with those bees in Peking, in the Russian Orthodox Mission, and also through other beekeepers in the Peking Province.

The exterior of those bees reminds me of our Caucasian bees, from Abasia (Asiatic Russia), but they are of a smaller size and brighter color.

The Chinese bees possess the same quality as the Caucasian—they are fond of work and of good disposition. They collect clear and transparent honey. The old wax they destroy nearly altogether, partly in winter time, replacing it with a new, white wax. They do not keep at all any dark honey-combs.

It is necessary to notice a particular quality of the Chinese bees: they never bring propolis (bee-glue), and do not use it in the beehive if it is given to them, and in all cases they use only wax, and even the holes in the beehive they glue with a pure white wax. At least, being one and a half years in China, I did not see any propolis anywhere. I supposed first that in China they did not have those kinds of plants from which propolis could be obtained, but those doubts were destroyed by one Chinese beekeeper who wrote for bees from the Far East (Siberia) to China. And those bees collected lots of propolis while the others, next to them, had not a particle of it. I think that those bees must be very interesting to American beekeepers, because they will always prepare clean sections without propolis, and it won't be necessary to lose time cleaning them, as is always necessary when getting honey from bees of other races.

If any one of the American beekeepers has any interest in these bees, it is possible to order them from the Russian Orthodox Mission in China, Peking (Bei-gooane).

Java.

## STORING THE HONEY.

By L. H. Cobb

A good many beginners in beekeeping will have a fairly generous supply of surplus honey this year if conditions are general as they are with us. I know some of these who plan to keep most of their honey for home use, and they are planning how to store it, even now, and the plans of the amateur in this line are apt to be just opposite to what they should be.

Honey should never be stored in a cellar or kept in a refrigerator. Coolness is not what honey needs to keep it in good condition. It should be stored in a dry, warm place as free from dust as possible. Mice and ants are both destructive pests, and to be guarded against. It is not hard to guard against the mice, but to prevent ants getting to the combs is another question. One can hardly make the container, in which comb honey in the frame or section is stored, tight enough to stop ants, so the next best thing is to have it set up on a table fitted with ant protection. I have set the legs of the table in pans with a little kerosene in them, and even after the kerosene is evaporated out of the pans it keeps the ants at bay. Most housewives have some favorite method of combating ants, so that, they will be able to make the honey safe in this line.

Honey will absorb moisture from the air if kept in a moist atmosphere. I have seen cappings turn dark and become almost transparent in extremely damp locations, so the wax cappings will not be a full protection, and extracted honey exposed to the air would soon begin to thin up if not in a dry, warm place. This thinning results in souring if carried far. There is nothing like thick, well-ripened honey, and we should let it get fully ripened before we take from the hives and then store in a way to keep it thick.

Extracting combs that have a considerable number of cells filled but not sealed will result in thinner honey and great care must be taken to keep this from fermenting. It is best to leave such frames on the hives until the flow is over entirely and then the bees will either empty the unsealed cells or fill them up, as the case may be. If they cannot fill when the flow stops entirely they will take out of part of the cells and store in others and seal what they have and leave the other cells empty. I have taken off frames where solid sealed honey filled a third of the frame and the remainder of a two-thirds built out comb was empty. Previously I had noted that the empty part of the comb had been full of uncapped honey, but the flow stopped suddenly and did not come on again.

An attic or an upstairs closet is often ideal for honey storing. If where the temperature will be kept comparatively even in winter, granulation will not be so bad as if subject to quick changes.

Kansas.

## UNITING SWARMS AND COLONIES

By A. F. Bonney

The writer, early in his career as a beekeeper, had occasion many times to unite bees, as swarms were numerous, and many were secured, and after trying about every odoriferous substance known to the druggist, finally settled on peppermint, and has used it several years with uniform success, but without paying much attention to the why of his successes. Finally, however, curiosity took possession of his mind, and he began to study.

Next to peppermint, fair success may be secured with anise, using the oil dissolved in denatured alcohol, and this mixture in water, as the peppermint is used, but so much of it is required that it becomes quite expensive, and even then there are times when good results will not be secured. To mention other substances: cajeput failed in most cases, wintergreen gave poor results, oils of orange and lemon were failures, ammonia drove the bees out of the brood chamber in a mass, chloroform puts them to sleep and destroys memory, assafoetida acts as smoke does but in a mild way, whole smoke and the odor of creosote and pyroligneous acid seem to have a tendency to make the bees ball the queen. Carbolic acid was a repellant pure and simple, as was naphthalene (moth balls).

While peppermint appears to temporarily destroy the sense of smell in bees, it differs from chloroform, which renders the bees dormant, as it does the human, and, as mentioned before, destroys memory in the bees. It is suggested that this agent will prove valuable in introducing queens.

Experimenting with peppermint, and its active principle, menthol, I found it ideal in every way, for the bees do not object to it, and will tolerate even the pure oil, dropped into the corners of the brood chamber, and a very small amount, so little as four drops, seems efficacious, and a very weak solution of the essence in water will enable one to unite swarms or colonies, no matter how excited or hostile they may be, and I finally decided that the odor of the peppermint had a paralyzing effect on the smelling organs of the little animals, and we know that the sense of smell is the principal one possessed by bees.

The factor of time is valuable when using the peppermint, and, as strange as it may seem, two colonies may be united within one minute after a moderately strong solution of peppermint in water is used, say a teaspoonful of the essence, which may be secured at drug stores, in 8 or 10 ounces of water. After uniting bees in this way I have found bunches of them saturated with the solution, and watching them carefully, found that they did not seem at all injured after they had dried off and gone to work.

I shall remark here, entirely for the benefit of the beginner, that if you have two or more colonies or swarms, with queens, to be united, pay no attention to the queens, for it is a provision of Mother Nature that when two queens fight for supremacy of the hive one will surely survive. If, however, one queen is to be saved, destroy the other.

Iowa.

## POISONOUS SPRAY

By Will H. Gray

I have just read the letter by G. A. Barbisch about the poisoning of his bees by fruit spraying, and your own notes on the subject. In my experience the fruit grower sprays, not when it is best to spray, but when he can get the spraying machine, regardless of the state of the blossoms.

It ought to be easy enough to get a law passed making it compulsory for the fruit grower to notify the beekeepers in his vicinity of the day or days that he is going to use summer spray. The beekeeper then will have the alternative of shutting in his bees for that day or claiming damages in case of loss, as in the latter case proof would be simple. The effect on the "sprayer" of this law, would make him realize that there were other interests besides his own, and he would be more careful.

This fruit spray question is always cropping up in the irrigated lands of the West. It is generally thought that in a number of cases the bees get the spray in mistake for water, and not necessarily on the flowers; in this case water could be put out during spraying operations.

British Columbia.

## EUROPEAN FOULBROOD

### Something New (?) About It

By Arthur C. Miller

The subtle spread of this malady is baffling, as is also its rise in virulence and oft its disappearance.

It seems to come out of the thin air; to linger along, doing little or no harm, and then suddenly to develop a virulence which at one leap goes beyond control. But even that burns itself out by destroying every colony, and the very filth it leaves behind forces the owner to either destroy it all with fire or render the combs into wax, thoroughly cleanse hive and frames and make a fresh start.

Sometimes the re-established apiary remains clean for years, or the

A close-up of the stinging bees. Bee on the left is beginning to sting, while the one on the right is finishing, leaving the sting in the arm.

disease may reappear within a season or two.

Again, it will suddenly appear in some previously free yard far from any infected territory. How does it get there? I discovered one of the ways this summer. A thrifty apiary in territory never known to be infected before and two miles from the nearest known bees, had a stray swarm come to it and establish itself in a vacant hive containing a full set of clean combs. I chanced to discover it within ten days of its arrival, and fully half of the larvæ showed the disease. It was quite evident that a swarm can carry germs of the disease. Perhaps if they had had to build their own combs, they might have gotten rid of all germs before there was any brood to feed.

But any vagrant swarm from an infected hive may wander into our best kept apiaries and bring trouble galore. And if such a swarm joins a weak or queenless colony right in the midst of a lot of clean ones, we can easily see how quickly that apiary would be ruined.

And how can we prevent it? I don't know. But I do know it does not worry me the way it did. It is always a bother, but it need not be a calamity.

Rhode Island.

## SOME HONEY PLANTS OF ALABAMA

By L. H. Pammel

There are great possibilities for beekeepers in the State of Alabama, and there are a large number of honey plants growing in that State. The writer recently spent a week in Alabama, and while there noted the bees, and the flowers they visited. My observations were mostly made at Montgomery and Tuskegee. In the vicinity of Montgomery, the chief supply of honey, while there, came from the biennial white sweet clover (**Melilotus alba**), although I am told that in western Alabama there is much of the annual white sweet clover, known as Hubam. There was some of the yellow( **Melilotus officinalis**). It took honeybees only a little over a second to drain each flower of nectar.

There was considerable of the small annual yellow sweet clover (**Melilotus indica**). The small yellow and the white biennial have fairly taken the country. Bees were abundant on the white and the biennial yellow, and occasionally they were observed on **M. indica.** I do not consider this of great value as a honey plant, judging from what I saw.

Another legume is spreading in the country, the black medick (**Medicago denticulata**). I did not see any bees on the plant, though they may occur. I was quite surprised to find that the white clover (**Trifolium repens**) was fairly common around Montgomery and frequently visited by honeybees. The limy soil of this region is well adapted to this splendid honey-producing plant. There are many native legumes, only a few, however, furnish nectar. There is an abundance of cultivated legumes like the lima bean (**Phaseolus lunatus**) and the cowpea (**Vigna sinensis**). While these two plants yield some honey, they are not important. Species of **Rhus** are abundant; of these the most common is the dwarf sumach (**Rhus copallina**), which is abundant in rocky woodlands or sandy pine barrens. This plant, like its near relative, the common sumach (**Rhus glabra**) and fragrant sumach (**Rhus aromatica**), should yield some honey.

The sumachs are common in gravelly soils. I was much interested to note the value of some members of the mint family. Horsemint (**Monarda punctata**) was common on clay and somewhat sandy soils, and is a good honey plant. I saw it frequently visited by bees, and they were from one to two seconds on a flower. Each whorl had from 3 to 5 flowers in bloom.

I might note the abundance of large horsemint (**Monarda fistulosa**) in woods. It is slightly different from our species. I did not observe any honeybees on this species. There are several species of Pycnanthemum in pine woods and the narrow-leaved Virginia thyme (**Pycnanthemum linifolium**), hyssop-leaved mountain mint (**Pycnanthemum hyssopifolia**), the whitish basil (**Pycnanthemum albescens**); in the Birmingham region the American pennyroyal (**Hedeoma pulegioides**) was common. Catnip (**Nepeta cataria**) has become extensively naturalized, as well as the horehound (**Marrubium vulgare**) and motherwort (**Leonurus cardiaca.**) Another good honey plant of this family is wood sage (**Teucrium canadense**), which is fairly common in places.

Apiary of J. M. Cutts, 8 miles from Montgomery, Ala.

I was much interested in one of the cultivated shrubs, not infrequently planted as a hedge plant, thyme (**Thymus vulgaris**), which is one of the good honey plants. These plants were in full bloom early in June and were covered with bees from morning until night. The bees were, on an average, one and a half seconds on a flower.

The varnish tree (**Firmiana plantanifolia**), (the common name is a misnomer), is much visited by bees. It seems to be rich in honey. I saw many bees on it in Montgomery, and they seemed to find a great deal of nectar. On an average, they were from 4 to 6 seconds in a flower. The species is commonly planted for ornamental purposes.

At Tuskegee, I was much interested in watching honeybees work on the flowers of **Abelia**. I noticed that they got nectar, not in the usual way, but through perforations near the base of the flower. I thought at first that they were making the perforations, but soon found wasps were the real culprits and that the honeybees then made use of the perforations.

It seems to me that Alabama must be a paradise for beekeepers, with white sweet clover abundant in many parts of the State and, on the bottoms, such plants as sweet bay (**Magnolia glauca**) and magnolia (**Magnolia foetida**), though said not to be important; the tupelo genus (**Nyssa aquatica**), two species of basswood in the north, the common basswood (**Tilia americana**), which occurs only occasionally in northern Alabama, the silver leaf basswood (**Tilia heterophylla**), found in central Alabama, just in bloom. There are also several species of grape: the Muscadine grape (**Vitis rotundifolia**), the downy grape (**Vitis cinerea**) and the summer grape (**Vitis aestivalis**). I might say that members of the sunflower family are abundant, but nothing like our Spanish needle (**Bidens aurea**) of the North, the western bur marigold (**Bidens involucrata**). I noticed tickweed (**Coreopsis lanceolata**), but no bees on it. I noticed many asters and species of boneset, but none in bloom. The region is rich in members of the composite family and many of these furnish nectar. I noticed the Cherokee rose (**Rosa laevigata**) and the McCartney rose (**Rosa bracteata**) everywhere climbing over fences. These furnish an abundance of pollen. The list of honey and pollen plants might be greatly extended. There are, it seems to me, great possibilities in apiculture in Alabama; with the ever-increasing amount of sweet clover and the large number of honey-producing ornamental plants, Alabama should do wonders in beekeeping. I am told, however, that it is more profitable to raise queens and sell nuclei than to go into the business for honey production.

The only apiary I visited was near Montgomery, and this man made a business of raising queens and selling the nuclei. The honey season is a long one, from February until November, with a long range of blooming honey plants. It seems to me this should be a great field for honey. It is a field, as I view it, that has scarcely been touched. I saw few apiaries in Montgomery and other counties. I dare say Alabama could easily double its production of honey. I am sure this is true for Montgomery county.

## SIXTY YEARS AGO

To show how easily people may be led astray with theories, we here republish extracts of contributions to the American Bee Journal of 1861, the first year of its existence. Mr. E. Kirby, of Henrietta, N. Y., after reading the different articles expounding the Dzierzon theory on the fertilization of the queenbee, sustained a theory of his own, in 4 or 5 different issues. To quote Mr. Langstroth, who gave a resume of his views in a criticism, Mr. Kirby held that:

"The workers in their flight with the drones, alight on the drones' backs and cause them to give off their semen, which the workers lick up and carry to their appropriate cells in their hives, for the purpose of propagating the young queens. . . . The worker takes the semen thus obtained and impregnates the embryo worker larvæ in royal cells, which fecundates the ovary of the immature queen in order to give life to her drone progeny. She then comes forth fully prepared to lay eggs that produce drones only."

In a word, Mr. Kirby held that the royal jelly or pap which we now know is given similarly to all larvæ in the three first days of their life, and to the queen larvæ during their entire development, was the seminal fluid of the drone and that this was the explanation of the great number of drones produced in natural conditions. He said, also:

"I do not believe that the food or size of the cells have anything to do with the formation of their sexes. I believe that the queen, worker and drones are made such by impregnation at particular times; first, to form the queen; second, her ovary, to form the drones; third, the egg deposited from the drones in the queen's spermatheca, to form workers."

Again, farther along, he wrote:

"My theory is that, to produce the three sexes, there must be three distinct infusions of the semen. First, to impregnate the ovary to produce the drone; second, the queen infuses the egg from her spermatheca to produce workers; third, the workers infuse the worker larvæ in the royal cells and the ovary of the young queen, while yet in the cell, with the semen of the drone. Her eggs, when she leaves the cell, will produce only drones, without further fertilization. In Huber's time, he believed the jelly, so-called, was of such fertilizing powers as to cause the ovaries of the worker to become prolific. Dzierzon also believed that the fertile worker's eggs had in some way been impregnated, to cause them to produce drones only. As it is proved by Dr. Donhoff that it is the animal secretion found in the queen's cell that effects the physical change from a worker to a queen, I do not doubt that this goes far to substantiate my theory. . . . Semen is retained in the combs from the time the drones are destroyed, at least until they appear the following season. . . . "

The very pretty arguments thus given were set to naught and the theory discarded, when the following very positive reply by C. W. T., of Hulmeville, Penna., was published in the December, 1861, number:

"Mr. Kirby has at last got himself and his theory in a tight place. He says: Semen is retained in the combs from the time the drones are destroyed, at least until they appear the following season. Here is a positive assertion that Mr. Kirby has got to prove, if he wishes to sustain his theory, for in no other way can he account for the production of queens in winter, or in the absence of drones; that is, according to his theory. If semen really exists in the beehive in winter, stored up in the combs, the microscope will show it, and I hope Mr. Kirby will occupy some of his spare moments, during the present winter, in procuring the necessary proof; for without it, his theory cannot stand.

"It seems to me that considerable confusion must exist in the minds of the advocates of the above theory in regard to the different functions of the organs of nutrition and of generation, or reproduction, and as to these functions being in any way interchangeable. Here we have it asserted that a substance, the semen of the drone, taken into the alimentary canal of the bees, and subjected to the action of the organs of digestion and assimilation, will produce a hybrid or cross in the blood! Is not this something new under the sun? I know that there are some agriculturists on a small scale, who believe in potatoes 'mixing in the hill.' This would be a case in point, taken from the vegetable kingdom, but the fact, like Mr. Kirby's theory, needs proof. We are also aware that there are thousands of white children born in the South every year who never know any other nurses than negro nurses, and I would as soon expect to account for the existence of mulatto children in this way, as I would for an impurity in the blood of the bee, by Mr. Kirby's theory."

## WHAT IS A "COMMERCIAL" BEEKEEPER?

By Geo. W. York

I have read the answer given to the above question by the Editor, on page 237. He seems to think I can answer the question as well as anyone, on the theory, possibly, that some people have, of "letting George do it," or "George can do it."

Sometimes I like to differ from other people (C. P. D., for instance) just to draw them out, and to stir them up a little. Mr. Dadant once said to me that he thought opposition was a good thing, as it causes the other side to bring out their best reasons for their opinions. So here goes on the "commercial" beekeeper question:

I would say that a "commercial" beekeeper is one that keeps bees, or produces honey, for the larger part of his living or business. I would hardly say that one who has only 50, or possibly 100 colonies, is a "commercial" beekeeper. I think his bee business should occupy the major portion of his time if he could claim to be counted in the class of "commercial" beekeepers.

I am just wondering if anyone running less than 200 colonies of bees could rightfully be called a "commercial"beekeeper. It might be that a queen breeder having less than that number of colonies would be entitled to a place in the "commercial" beekeeper class.

I don't suppose that this question is of very vital importance, and yet it was asked in good faith by a Washington beekeeper, and deserves a sincere reply, just as Mr. Dadant has already given it.

I noticed somewhere that the State of California claims to have 1,500 commercial beekeepers out of a total of 8,000. Now, are we to understand that these 1,500 follow beekeeping as a business? As California possibly has more commercial beekeepers to the square mile than any other State, I would like to hear from that locality, as well as from elsewhere, if ye editor deems the question of sufficient importance to devote a little more space to it.

Washington.

## QUEENS, AND OTHER THINGS

By F. Dundas Todd

Having been gifted with a head for figures, I have great pleasure in facing a lot of statistics and arranging them in different ways to see what I can learn from them. Well, a lot of beehives provide just as much material for this kind of recreation as does any other line of human endeavor, so when I get my first lot of averages worked out, which concern the brood and honey consumption during the winter, I like to see how the various strains of queens have comported themselves, also how age tells on their egg-laying ability. So far, I have not got to the stage where I consider a queen is useless because she has attained the age of one, two or three years; I go by her record as exhibited in winter honey consumption, spring brood raising and honey production. When I dispose of a queen it is for a very definite cause. For example, number 20 at the end of April, 1919, was marked as being short of stores, but it gave a crop of 35 pounds in August. I then left 60 pounds in the hive to make sure it would have enough, but in the spring it had only 9 pounds left, with brood in only two combs. In fact it had consumed 18 pounds of honey above the average of the yard and had little to show for it. So that hive was marked with suspicion in my mind. In the first week of July, when the honey flow was due, it was not up to strength, having only five Jumbo frames of brood. So I killed the queen and combined the colony with number 19.

Weeding out in this fashion I find I have seven queens that were raised in 1917, thirteen in 1918, six in 1919, and nine of unknown age. Now for a comparison as to their merits:

| Queens | Honey | Brood |
|---|---|---|
| 1917 | 7 lbs. | 5¾ fr. |
| 1918 | 11 lbs. | 5 fr. |
| 1919 | 9 lbs. | 4¾ fr. |
| Unknown | 12 lbs. | 4½ f. |

On an average, these 3-year-old queens did as well as any other lot in the yard, but I specially want to point out that it pays to be continually weeding out the poor stock. To show what an old queen, whose merit has been proved, can do, let me tell the story of number 9. She wintered and springed on 25 pounds of honey and had four fine Jumbo frames of brood in the last week of April. Two weeks later I divided the hive, moving the old queen with three frames of brood to a new stand. On June 25 the brood-chamber was packed with bees and I sold her to a man whom I knew had a good location, good even in a dry season. Two weeks later he reported that the colony had filled and sealed 20 shallow frames, that is close on 60 pounds of honey. All this from a queen raised in 1917, one that had to contend all spring with a very untoward season. I am always ready to kill a queen for cause, but not for age. I only wish my conditions were such that I could raise queens from my best stock, but for a man who sees his bees only once a week such is impossible, especially when weather conditions are erratic.

I did my best to raise some queens the past season, and got enough experience to make me sympathize with the queen breeders. At one time I had no less than eight nuclei with young queens waiting to be mated.

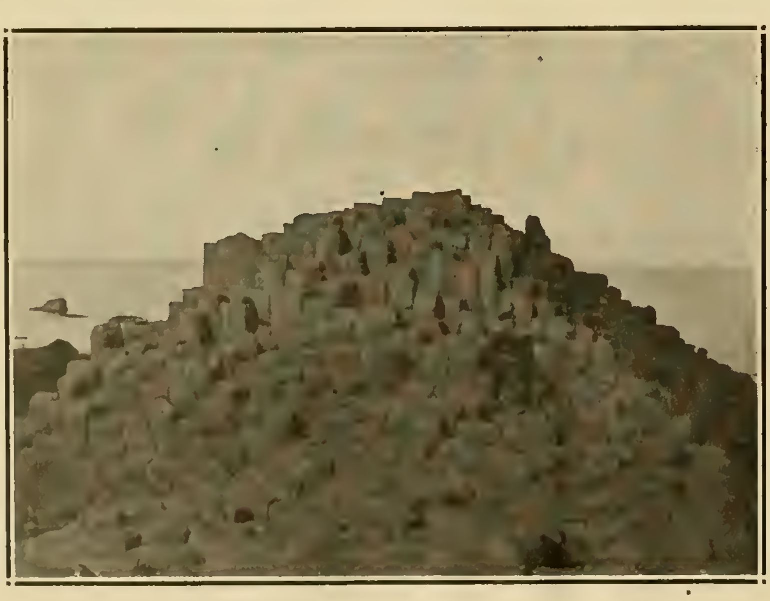
A famous astronomer once said in my hearing: "A fact is a wonderful thing," this being his sole contribution to an informal discussion that lasted for half an hour. Mr. Sladen, many years ago, stated this as a fact, that a young queen will not fly to mate unless the temperature be 65 degrees or above. My first nucleus was made on the 12th of May, and from that date to almost the end of June my notebook shows only two days—June 1 and 20—with a temperature of at least 65 degrees. Well, here is the result, only two of my young queens were mated. I need not expand my story by telling how I strove with these nuclei to keep them always provided with a young queen apiece, but I often thought of the remark made to me 40 years ago by an old friend: "It is easier to make five dollars than five cents," meaning that when times are prosperous business rushes to one, but when they are bad we have to chase much for little profit.

### Concerning Fireweed

Another of Mr. Sladen's facts concerns fireweed, our greatest honey plant. A few years ago we were discussing it and I told him that while I was surrounded by thousands of acres of this plant, I had not seen a honey flow from it, yet in the books it was described as one of the most reliable honey-secreting plants. He then informed me that in dry weather the fine rootlets seemed to decay so that they could not absorb moisture, therefore, while the bloom was plentiful, there was no nectar in the flower. Since that conversation I have had more experience and think he is right. I have taken the trouble to follow the root system of fireweed and find it sends out horizontal roots a little more than an inch below the surface of the ground, and that these are many feet in length. I remember one young plant that had roots four feet long. In my part of the world July and August are very dry, and June is not much better, but we generally have a few heavy rains in the third week of the month. For two seasons these June rains have failed, so our soil in July, our honey-flow month, has been very dry. Fireweed, therefore, has yielded nectar on low-lying swampy ground only, and here the crops have been very good. Much of my work among the beekeepers consists in pointing out to them the local sources of nectar and urging them to move their bees to more reliable regions, generally but a mile or two away. Only a few are in a position to move their half dozen colonies, these being merely a side line.

### Regarding Advice

How few people will follow the advice they solicit! At the moment they are eagerly in earnest, but they are variable as the shade. It is not knowledge they are thirsting for, they have merely found an excellent opportunity for interesting conversation. No man with a colony of bees can make me believe he is keenly interested when he has not taken the trouble to read the bee bulletin that was sent him. But there is one man and his wife who cheer me up every year. They are, or were, alien enemies, but they were never such to me, merely hard-working, thrifty people making a comfortable living where many had quite a struggle for existence. I just love to get lunch in the kitchen, bread, butter, milk, lettuce, preserved fruit, all home products; the coffee is the only imported article on the table. House nicely furnished, children well clad and intelligent. What do they know about bees? Mighty little, but a dozen colonies provide them yearly with about $200 cash, and all the honey they want for their own use. Yet but a short distance away is an old British bee expert who can go into the finest points of beekeeping, but he never gets a crop. It is a poor region, dry as a bone in summer; yet even there two men get good crops, probably from snowberry bush, but the expert has not had a moderate crop in seven years, yet one could throw a stone from one of the successful apiaries to his. What is the secret? I told these men as I tell many, leave one solid super of honey on each hive at the end of the season, above that an empty super half full of sacking or dry moss, leave the bees alone until the longest day, then put on a super or two. They obey absolutely, and get the honey, as their colonies are mighty strong when they do not swarm. Even swarming, as a rule, is all over in May, so the colonies are, in an average season, ready for the flow in July. On the other hand, the expert, who sneers at the other men's ignorance, will persist in keeping his bees according to the method he learned in the old land. He winters in an eight-frame hive, hence his bees are weak and short of stores in spring. He intends to feed sugar daily after pollen is available, but never does, so his bees are never



The Giants' Causeway, Ireland, showing large hexagonal blocks of stone.

ready for the honey flow. Thus he goes on year by year, with long explanations as to why he got no crop or a poor one, but of one thing he is certain, the fault is not his.

British Columbia.

## THE HONEY COMB

By Will H. Gray

The beekeeper must often wonder where and how the bee developed the idea of comb. If one asks the average beeman where he has seen a similar formation he will, most likely, be unable to answer. If he has visited or seen pictures of those more or less rare occurrences such as the Giant's Causeway, in the north of Ireland, he will be at once struck by the resemblance to bee cells.

One does not have to travel to meet numerous cases in nature of the hexagonal cell, for we are surrounded by them on every side. We do not see them. Why? Because they are too small.

When the student sets up his microscope and examines a bee's eye he is at once struck by the fact, or coincidence, that it looks just like a piece of dark, regular comb. Later on he finds many other cases: the stem of a lily and the pith of the elder show six sided cells. Our interest being stimulated, we look at many other things. The outer coat of a holly berry is made up of four, five and six-sided figures, with many transition cells that at once remind us of those we see in brace combs, and between drone and worker cells.

There is a family of tiny water insects called rotifers; some of them incase themselves in a tube which is built up of little bricks made from their own waste food. These bricks are sometimes of hexagonal shape. If the little inmate is fed with food stained with different colored dyes, the protecting tube will have the appearance of layer cake.

I have, somewhere, a lump of chain coral that was dug up in Ontario. It is made up of small oval cells all joined together; quite an ideal home for little insects other than those who made it hundreds of millions of years ago; and, who knows? perhaps the ancestors of the honeybee at one time or another found a vegetable or mineral abode which suited their purpose during a stage of their wonderful development.

If we turn to the sea, whence the bee probably came, and look with the microscope at some of those beautiful little plants known as marine diatoms, we find one, at least, that looks familiar: this is the Honeycombed Triceratium, with its cells, though slightly elongated, as regular as an aluminum comb.

British Columbia.

(On this subject of the shape of the cells, Messrs. Langstroth and Charles Dadant had this to say (Hive & Honey Bee, paragraphs 212-213):

"An equilateral triangle would have been impossible for an insect with a round body to build. A circle seems to be the best shape for the development of the larvæ; but such a figure would have caused a needless sacrifice of space, materials and strength. The body of the immature insect, as it undergoes its changes, is charged with a superabundance of moisture, which passes off through the reticulated cover of its cell; may not a hexagon, therefore, while approaching so nearly to the shape of a circle as not to incommode the young bee, furnish in its six corners, the necessary vacancies for a more thorough ventilation?

"Is it credible that these little insects can unite so many requisites in the construction of their cells?

"The fact is that the hexagonal shape of the cells is naturally produced, and without any calculation, by the bee. She wants to build each cell round, but as every cell touches the next ones, and as she does not wish to leave any space between, each one of the cells flattens at the contact, as would soap bubbles if all of the same diameter. It is the same for the lozenges of the bottom. The bee, wanting the bottom of the cell concave inside, makes it, naturally, convex on the outside. As this convexity projects on the opposite side of the median line, the bee who builds the opposite cells begins, naturally, on the tip of the convexity, the walls of cells just begun, since she wants also to make their bottom concave. The final result is that one-third of the bottom of each of three cells makes the bottom of one cell opposite, and each one of the lozenges is flattened, so as not to encroach in the opposite cells."

Thus it is plain that, whether it is the bee's comb, or the bee's composite eye, or the stem of the lily, or the chain of coral, etc., those six-sided shapes are the result of rounded bodies, of similar diameter, pressing against each other and assuming the only shape that will make them fit together without any spaces or waste material between them.—Editor.)

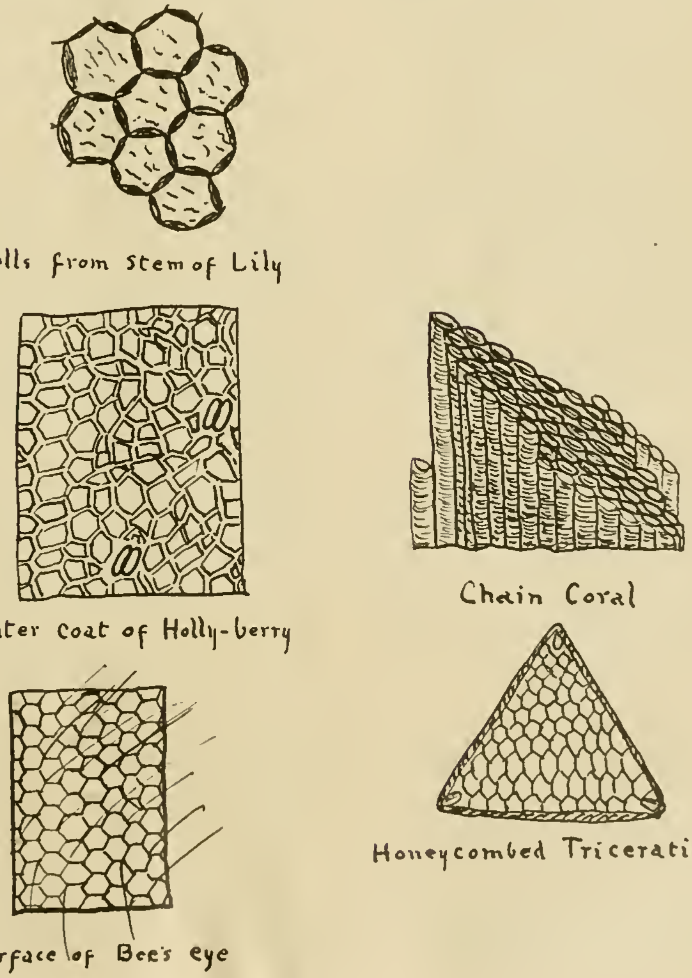
## BEEKEEPING KNOWLEDGE

By Prof. H. F. Wilson

It is almost impossible to succeed with any business without a fair understanding of the basic principles of that business. No single movement has been more productive of better conditions among beekeepers than the extension work carried on over the entire United States during the past four years by both National and State offcials.

Individual beekeepers have from time to time worked out new methods of manipulation, but the study of bee behavior has mostly been done by trained investigators who were able to properly interpret the results, because of a knowledge of such subjects as Physics, Chemistry, Zoology, etc.

Progress depends upon knowledge. First the facts must be discovered and then they must, by means of books


Cells from stem of Lily

Outer coat of Holly-berry

Chain Coral

Surface of Bee's eye

Honeycombed Triceratium

Honey-comb similarities in Nature

or magazines, be given to the general public.

No successful beekeeper ever learned how to keep bees in a single day, or even a season. Neither did he learn without many hours of study. His text books may have been the bee magazines and his laboratory the beeyard. Perhaps a neighbor beekeeper was his teacher. At best his education came slowly and oftentimes hard. Many a lesson was learned through some serious loss. By actual experience we learn what is best and sometimes what not to do.

Unconsciously the beekeeper becomes educated to a small degree in the sciences which form the fundamental basis of bee behavior and successful beekeeping. But without a separate study of these sciences many circumstances which happen in the work with bees and in the treatment of wax and honey cannot be clear to us.

It is not necessary that the beekeeper go to school to learn these things, for he may read and understand for himself. Also he may learn as much as is necessary by attending the meetings provided by our national and State extension workers.

Our extension men may sometimes be wrong in their teachings, but the good they do more than balances the bad. It is, therefore, urgent that every phase of the beekeeping industry, both State and National, receive the active support of each individual beekeeper.

It is also necessary that every large beekeeper, in so far as possible, familiarize himself with the fundamental sciences of beekeeping.

### Animal Behavior

It is known that every kind of animal is directly influenced by the conditions which surround it. Food, light, heat, climate, and other things control the development. So the individual bee and the entire colony are influenced by these forces. Each individual bee lives for itself, but in its daily life it works for the colony and those things, which happen to influence one, influence all more or less alike when they receive the same stimulus.

The study of animal behavior in this case is a study of bee behavior. We learn that bees will behave in a certain way when certain conditions exist. For example, the bees cluster when the temperature falls, or, when the queen is removed or lost, queen cells will be started if young brood is present. Practically all of our manipulations of the colony then are based on bee behavior.

### Physics

The relation of Physical Science to bees is clearly evident in the effect of heat, cold, light and other things on the behavior of bees. It is truly remarkable how bees respond to changes in temperature and in a lesser degree to light.

If the temperature goes below 60 degrees F. the bees form a cluster. If it goes above 70 degrees F. they engage freely in flight. Above 90 degrees F. brood rearing begins.

Bees fly more freely on sunshiny days than on cloudy days.

A light in the bee cellar draws the bees out and frequently many bees come out and are lost because of a single ray of light entering through the cellar wall. The property of honey to absorb moisture is also a physical problem.

### Chemistry

The science of chemistry is very important, both in the food of bees and in its effect on honey. Unripened honey ferments and changes from sugar to alcohol and finally to vinegar. When honey is heated a chemical change occurs wherein the honey changes in flavor and color. The bee itself is a wonderful little chemical factor in that it produces wax for its combs, food for its young, a preservative for the honey and the fluid of the sting defense.

### Climatology

Regardless of climate, bees remain the same wherever we find them, but climate influences beekeeping perhaps more than any other single science. It not only influences the life of the bee, but materially affects its food supply both as to quantity and quality. Bees depend upon nectar for their food; the nectar comes from plants, and plants are governed by climate both as to kind and amount of nectar secretion.

Weather conditions, from day to day, directly affect the manipulation of the beekeeper and govern his yearly program. In the North, weather conditions quite largely form the basis for the care of bees in fall, winter and spring, while in the South more depends upon the time and amount of the honey flows.

### Geology

Perhaps unknown to himself, the beekeeper, soon after acquiring his bees, begins a study of geology, because the composition of the soil frequently determines the kind of plant and the amount and quality of nectar to be secured.

### Topography

Mountain ranges, lakes, rivers, etc., or, as we call it, "the lay of the land," has a direct effect on climatology and helps to create beekeeping localities or regions.

### Botany

This science deals with not only the kind of plants but their structure as well. The kind of plant and amount of nectar secretion is directly governed by climatology, but each species, or variety of plant secretes its individual flavor of nectar. The beekeeper is interested in botany, because he learns that different plants produce different kinds of honey and he must know the names of the plants in order to grade his honey. He also gains a more or less accurate knowledge of plants which do or do not secrete nectar and pollen.

To help increase our knowledge, the writer suggests that every practical beekeeper include in his bee library a popular text on each of these subjects, and during his leisure time read over those subjects which have some bearing on beekeeping.

Wisconsin.

## SWEET CLOVER

By F. A. James

Sweet clover is a wonderful honey plant, especially when the weather has been dry during the blooming season, as has been the case this year.

Although we have had scarcely any rain during May and June, my bees have averaged 100 pounds or more of honey per colony. This I consider good under average treatment.

This, of course, is extracted honey. I began to extract on June 1, and wound up on July 4, and if weather conditions continue favorable, I expect to be able to take at least 25 pounds more from each colony, and still leave them ample supply to winter well on.

This clover continues over a long blooming period. This year it began to blossom about April 1, and now, on July 6, we still have considerable bloom for the bees to work on.

I would certainly most strongly recommend to beekeepers that they encourage this honey plant, but more especially the new white annual variety.

The biennial is equally as good a honey plant, but the advantage must rest with the annual over the biennial, in view of the fact that the annual will return a beekeeper profit from his labors in four months after seeding. The biennial is, of course, of no use to bees until it blossoms, which, as we all know, is the second year after seeding.

Alabama.

## DRONE COMB

By E. M. Cole

The article on drone comb in the July Journal, by F. Greiner, was interesting to me, as I was on the lookout for the same thing. I had been too busy to get all my combs patched, so had a pretty good supply of drone comb in the supers.

Remembering Dr. Miller's remark, that one reason he used full sheets of foundation in sections was to prevent the bees building drone comb and holding it open for the queen, I kept close watch and found the bees held drone comb open and perfectly dry of honey until sometimes nearly all the balance of the comb was sealed.

I noticed another thing which surprised me: bees hold very dark worker comb open seemingly to as great an extent as they do drone comb.

We are taught that the queen prefers dark combs over light ones in which to deposit her eggs; but it seems from this that the bees have a say in the matter and by holding comb open or filling it with honey indicate to the queen where they want the brood. I noticed that newly-drawn combs usually had but a narrow half circle of brood when dark combs on each side of it were nearly solid with brood; probably new combs often come into use gradually as the bees get short of old comb and are forced to use the new.

Likely instinct guides the bees in their choice of old comb for brood as being less likely to melt down from heat, and better protection from sudden changes in temperature. I was on the watch for another thing in the drone comb line: If the bees feel that there is a shortage of drone comb in the brood nest we are told that they will tear down worker comb and replace it with drone cells. I have often told that story while airing my knowledge to a beginner; but this summer I have acquired some doubt about it.

Some writer also claimed that this tearing out of worker comb was mostly, if not altogether at the cold end of the comb, that is, at the lower corner, next the entrance, while others claimed the bees tore out the lower corner without caring whether it was the cold or warm end of the hive. My 30 colonies are on 30 sets of combs that are hard to beat for all worker comb, and as I was using some foundation in the brood nest this would give the bees a chance to do some easy tearing on new and tender comb, and incidentally I could determine which lower corner they preferred to tear out and insert drone comb.

They didn't tear out any. Out of a hundred or more combs I examined I found just one where the bees had tucked a half dozen drone cells in each lower corner. They built drone cells next the bottom bar and alongside it and between the bottom bar and floor, but no tearing out worker and inserting drone comb.

I think this drone comb in the corners gets there in a perfectly natural manner. Foundation is sometimes given to the bees too late in the season to be fully drawn out, and they gnaw it badly, especially at the two lower corners, and when these corners are filled out later they are almost sure to be filled with drone comb, which accounts for many of the cases where bees are supposed to tear out worker comb and replace it with drone comb.

Bees evidently work over old cappings and use them again, tear down and use old queen cells, will tear to pieces and carry into the hive bits of old comb dropped on the alighting board, cut down deep honey cells to the proper depth for brood and use a large part of the material. They gnaw the edges of the combs, and especially the corners for material, and I believe the main reason they gnaw the corners of both combs and foundation is simply that the angle formed by the end bar and bottom bar gives them a much better chance to work. I believe most of this gnawing of old combs is done early in the season, when material for capping and repairing is scarce, the bees are mostly old, little or no honey coming in, and wax production at a low ebb.

I would expect the lower corner next the entrance to be gnawed the most, as it is longest out of use and more subject to damage by the weather, and when the brood nest is crowded down until it fills the hive these damaged corners are filled with drone comb, just as damaged combs are in any other part of the hive.

So I now have some doubt if bees ever deliberately tear down good worker comb for the express purpose of building in drone comb.

## BEES BUILDING DRONE COMB ON FOUNDATION

By J. F. Diemer

Dear Mr. Dadant: You remember that we have often talked about why, and wondered how it happened, that bees sometimes build drone comb on one side, and worker comb on the other side.

Since you were here, I have been investigating a little in regard to how it happens so. I have concluded that the lesser wax moth, the kind that burrows under the young bees before they emerge from the combs, tangle the wings up so much that when they finally try to emerge from the cells they can't get out, because the web which is fastened to the wings and the base of the cells, holds them in. I have seen a patch of young bees as big as your hand struggling to get out; but they never succeed in breaking the web that holds them prisoners until the bees of the colony release them by gnawing away the comb clear down to the base of the cells. There is no way the bees can get hold of the little, quick rascals except by tearing all the cells off the base. The big fat common wax worm sometimes tunnels along just under the capping and over the heads of the brood; these are easily removed by the bees of the colony. But these wise little princes of darkness certainly believe in safety first, therefore they burrow under the brood, but only on one side of the midrib, never on both sides.

I presume that after the bees have gnawed away the cells right down to the midrib, and a honey flow starts, and they have no other chance to rear drones because full sheets have been used in each frame, and you know it is their nature to get a few drones some way; they arrange a flat place as large as the piece of comb I am sending you under separate cover. Now, Mr. Dadant, if you were a colony of bees (which you are not) and found a chance to rear some good big drones on one side of the comb, would you do it? The bees do, although I never caught them doing it. The next time I find a weak colony I will let them stay weak until they get a good nest of these little demons, then put the comb in a strong colony and keep tab on it.

Missouri.

## MOVING BEES WITH ENTRANCE OPEN

By Jes Dalton

Having occasion to move some 150 colonies in midsummer, down in Louisiana, over swampy roads, I was naturally puzzled. In size they ran from 2-frame nuclei to 30 frame "long idea" fellows with two supers in them.

I, with an assistant, picked up one of the latter one night, boldly set it on a box in the rear of a Ford and set sail. Bees came out despite two active Jumbo smokers. Crawled all over us, demoralized our guiding senses and speed control. I ran over a hog and killed it (cost $10). All this about dusk.

Next day, after working in yard till a convenient time, I picked up a small load, packed them in securely, lashed them down with a 60-foot small rope, threw a canvass 10x29 feet over them, pulled to unloading location, uncovered them and next morning set them on stand.

After the "Canvass kink" I had no trouble at all. I hauled as many as 22 single story 8-frame colonies at one time. There are three kinks. Learn to lash, and there is a vast difference between lashing and winding rope around load. Lash so every hive will be tied, and then use a draw rope to take up slack in the lash rope. Tuck your canvass in good all around bottom of box, stuff it between fenders and box, and put burlap sacks in to hold it there, and be sure you ease Lizzie down into the chuck holes and over bumps, etc. And it is well to have a flap of the canvass loose so it can be opened and closed quickly. This last for "road hogs" that hold the entire road and make you slow down and go out into the ditch.

As you pull past them, loosen a few dozen well shaken bees and pull off and leave them together. Next day that rig will not only go into the ditch, but likely clear across it when they see you coming.

The bees crawl out and mix up some, but I went through and evened things up shortly afterward, and it was next to the only thing I could do in hot weather with hives full of brood, bees and nectar.

I combined moving with yard work. Would work in yard till time to load, and then load up and take a load to a new location to finish up day's work. I never smothered even a dozen bees that I could tell; broke no combs. I did not nail down lids. Some even had loose bottoms. I moved four miles. Some of the "long idea" queen-rearing and cell-building colonies had bars of cells in them in all stages, and these were not even molested, and all later hatched out O. K.

Louisiana.

## ALDRICH AS A HOST

I returned from Smithland last night, where I attended one of the most largely-attended and successful meetings of the year. There were fully 100 persons in attendance, beekeepers and their wives. The weather was ideal and the interest great.

We met on the B. A. Aldrich farm, and he was sure a fine host.

I asked those present to put down the price they expected to get for honey in small quantities at retail, 5 and 10-pound pails. An analysis of these figures showed the sentiment to be a shade better than 20 cents a pound.

There is a great sentiment in Woodbury County to peddle honey from house to house, and no doubt much will be disposed of in this way.

As smartweed is just blooming, I am almost certain to have a fall flow.

A. F. Bonney.

# THE EDITOR'S ANSWERS

**When stamp is enclosed, the editor will answer questions by mail. Since we have far more questions than we can print in the space available, several months sometimes elapse before answers appear.**

## Willow Herb

I notice in the A B C of Bee Culture an article about a plant called willow herb as being a large producer of nectar. Would be very thankful if you or some, of your correspondents would give me some information about it; also where it can be obtained. Am starting with bees and wish to get all the information I can. We have just started an irrigation system here and hope to soon have plenty of alfalfa growing around us. The farmers here seem to prefer that for their hay crop, but if there are other plants that will bloom at different times, am eager to learn what they are, so as to make the season of honey flow longer. Will say I am very much interested in the Journal and read it from start to finish as soon as it arrives.

OREGON.

Answer.—Willow herb or fireweed (*Epilobium angustifolium*) is just a weed growing in the burnt-over regions of Michigan and Wisconsin as well as in Canada. It is said to grow some in the northern States of the Pacific Coast. It yields delicious honey, but it has never been grown artificially, and we doubt whether it would pay to try to grow it, as it seems to succeed only where the land has been cleared by fire. It cannot be considered in the same class with alfalfa. The latter is a very useful fodder plant. To buy the seed of willow herb, try some of the large seed houses in any of the large cities. There is certainly very little demand for it.

## Moving Location of Bees in a House-Apiary

I have 9 hives of bees in a house-apiary; they are placed on a stand along one side of the house. This stand is becoming weak, so I built a strong one on the other side of the house. Now I would like to move my bees to this side. Will you please advise me how best to do this without losing the field bees, and when is the best time of the season to do it?

NEW HAMPSHIRE.

Answer.—This is probably one of the most difficult problems in beekeeping. You can move bees easily, but to move them a short distance, especially from one side of a house to the other, is difficult to do without losing bees.

If you think you can afford to do it, move them after smoking them heavily, early some morning; then if many bees return to the old spot, move them back in the evening. When you move them for the third time, the following morning, or that same evening, they will feel like looking around before leaving, and you will lose but few. Placing a slanting board in front of the hives, after moving them, helps to make them look back as they issue from the door. The important thing is to let them realize plainly that something is wrong. The better they realize it, the less of them will make the mistake of returning to the old spot.

## Cuban Honey for Feeding

Buy up some of the fine white honey here in Cuba that was not handled properly by the Cubans and others because extracted too green, and ship it to the States, locate near some live town or city and feed this honey to the bees to produce comb honey for peddling. What price could we pay for this kind of extracted honey when we sold the comb honey for 15 cents per pound? In other words, how much extracted honey does it take to produce a pound of comb honey? My experience here was that it takes 7 lbs. or better of honey to produce 2 pounds of comb honey; but I do not think that my conditions were ideal for this work. Will amber honey be lighter in color after the bees work it over again? I thought it was some lighter than honey not worked over.

CUBA.

Answer.—This proposition is hardly practicable. First, the unripe honey thus bought may be fermented in such a way as to make the honey unpalatable, after it is worked over by the bees. The chance is also that there might be honey of different grades and different colors in the lot. But more than all is the probability of loss in feeding it to the bees. Of all the enterprises of this kind that I ever saw, none succeeded, because of the great trouble of feeding it back. Ideal conditions are rarely found, and the probable happening would be that the bees would consume so much of it in comb building and in breeding that it would be unprofitable. All the experiments ever made indicate this to be the result.

If there is any change of color in the manipulation of this honey by the bees, I am inclined to think it would make it darker rather than lighter, though I don't know this positively; but just the thickening of it to ripen it would tend to give it more body, and therefore deeper color. If anyone has tried anything of this kind on a large scale and succeeded, we would like to hear from him.

## Water for Bees, Etc.

1. During a recent hot spell I placed a small can of water by the entrance to one of my two hives, and a force of bees took water into the hive nearly all day. Can bees be given too much water?

2. When giving a new or weak colony of bees a frame of brood from a stronger hive, shall I brush all the bees off it into this strong hive before placing the brood frame into the new colony?

3. A recent morning I discovered bees had taken out of hive two larvæ and two young bee skeletons; they seemed to be healthy brood, and hive apparently healthy also. Why were larvæ taken out of hive?

CALIFORNIA.

Answers.—1. No; bees will take only what they need of water in nursing the brood. It is not known to be used for any other purpose than to dilute the honey for brood food.

2. If the honey crop is on, you may give the comb of brood with all the young bees on it, making sure that you are not also giving the queen. If there is no crop on, at the time, it is better to brush all the bees off or shake them off. Usually, when you shake them off very few bees are left except very young bees, and those are most likely to be accepted.

3. I don't know. I suggest that there may have been a moth web passing by the cells containing those grubs or immature bees, and that the bees had to remove them in order to repair the damage. This is only a guess.

## Royal Jelly

Please explain how artificial royal jelly is made when none is to be had and a person wants to rear queens artificially.

NEW YORK.

Answer.—While several parties have recommended different things to take the place of royal jelly, we would not recommend anything that the bees did not make themselves.

Royal jelly was long thought to be quite different from the pap fed to the worker larvæ. But it is becoming more and more evident that there is but little difference, if any, *except in quantity*, between the pap given to the queen larvæ during the entire time of their growth and that given to the larvæ of workers during the first three days of their life as grubs. That is why we find, as Schirach informed us, as early as 1771, or 150 years ago, that the bees may rear queens from any larvæ not over 3 days old. Huber confirmed this and insisted on the fact that the bees generally select larvæ 3 days old to rear queens. After that age they are fed on coarser food.

I see no reason why you may not use the pap found in any cell containing a young grub, as royal jelly. There are always plenty of young larvæ in hives that are breeding, at the time when queen rearing may be carried on. True, it is not so plentiful in those cells as in real queen-cells, for the bees always feed the young queens plentifully, and that seems to be essential to their growth and perfection.

Concerning some of the experiments made and the conclusions drawn therefrom, in regard to royal jelly, read paragraph 491 of the "Hive & Honey Bee, Revised."

If, however, you prefer to have real royal jelly, you may follow the Pellett plan, Demaree fashion. Leave the queen of the colony on the comb where she was found, in an empty hive with foundation, on the old stand. Above that put a queen excluder, then an extracting super of combs, and above this the original hive containing the brood. "Twenty-four hours later the bees are given a frame of cell cups containing larvæ. These cups are placed in the hive in the same manner as usual, except that they have no royal jelly. A thin syrup made with sugar and water is then poured freely over the tops of these frames. The worker bees gorge themselves with this syrup and since the brood in the upper chamber is so far from the queen below, the bees are easily stimulated to start queen cells. Usually from one to three of these dry cells will be accepted, and two days later will furnish an abundant supply of royal jelly for grafting purposes."

Doolittle appears to have been of our opinion when he discussed the matter of royal jelly. He wrote:

"I claim that the food fed to all larvæ, up to the time they are 36 hours old, is exactly the same, whether the larvæ are designed for drones, queens or workers."

The important thing is to have the bees supplied plentifully with honey and pollen at the time when they are rearing queen-cells, for they certainly cannot supply royal jelly or pap, as plentifully as is should be furnished, unless they are in thriving circumstances.

## Pails for Honey

Do new tin pails have to be washed before filling with honey?

I have always washed them with hot soap water, then scalded them and drained and set them out in the hot sun to dry; but always find a little rust starts in drying, and when I get 50 pails or more washed the water is nearly as clean as when I started.

Why not dust them and be done with it? Is there any harmful chemical used in the manufacturing of these pails which has to be washed out?

MICHIGAN.

Answer.—Certainly, it is sufficient to either wipe or dust the inside of the pails to make them fit to contain honey. There is, however, a recommendation to make: Do not use pails coated with lead-tin. Lead-tin is of duller color than real tin, and is rarely used, but we have been warned by chemists that the lead in such tin might decompose and become poisonous.

It is a peculiar, but significant fact that honey does not rust tin pails a sugar syrup does. We have had honey in the same pails for as many as five years, and the tin was as bright as new. However, there would be rust in the joints of the tin, where the iron under it was exposed, if it was not fully solrered.

We had your experience exactly when we tried to wash pails either before or after using them for honey. They rust readily then. The tin which is made nowadays does not compare in quality with that of 50 years ago.

### Extractors—Removing Pollen

1. Is the 25 M. D. P extractor suitable for extracting from full depth Modified Dadant size aluminum honey combs?
2. Would this extractor throw out all pollen from cells?
3. When the Deadman wet comb cleaner is employed, if pollen were present in cells, would pollen be cleaned out and stored in hive of "cleaned-up" colony?
4. Would pollen intermixed with honey react chemically with it, or tend to produce a change in its composition as catalyzers sometimes do. MINNESOTA.

Answers.—1. Yes, that extractor is of the proper size for all frames 13½ inches in depth, or less, and of standard length. As to extracting from aluminum combs, there should be no difference in conditions between those and the wax combs.

2. No extractor, as far as I know, ever threw pollen out of combs.

3. Pollen is never carried out by the bees, as honey is.

4. I have never known of pollen causing any chemical reaction in honey, though it might, perhaps, if it was in great amount diluted in the honey. We have never had any trouble with it, except when bees fed on honey containing many grains of it, are confined to the hive for several weeks in winter. Then the pollen consumed evidently loads their intestines and causes diarrhea.

### Transferring in Virginia

What is the latest date, in Virginia, that one can drive bees into a new hive and they will make honey enough to live through the winter? VIRGINIA.

Answer.—The latest date, at which bees can make enough honey to winter, depends upon the blossoms of the locality. If you have asters, goldenrod, boneset, etc., in your vicinity, the bees may make enough to winter after the first of August. But if you live in a location where the tulip tree and white clover are the only sources of honey, your bees will make but little honey after the 15th of July.

The proper time to transfer bees from box hives or gums into movable-frame hives is the spring, just about the time of fruit bloom. At that time there is the least honey in the combs, and yet the crop is only a few days away.

### Vinegar From Honey

I have about 50 5-pound pails of last year's honey on hand, and I find that some of it is beginning to ferment.

Can I make it into vinegar, and if so, how shall I go about it to do it?

I did not extract until real late in the fall, and thought it would be all right, although a few combs were not well filled and capped, and some others only partly capped. IOWA.

Answer.—Yes, you can readily make vinegar out of that honey. It takes from 1½ to 2 pounds of honey for each gallon of water. We find that it is better that it should be heated, to kill the very diverse germs in the honey. Then mix with the liquid a small portion of fruit juice, after the honey is sufficiently cooled. An alcoholic fermentation will begin which will soon change into acetic, especially if you mix some vinegar or vinegar mother with the liquid after the first boiling. The more air it gets, the quicker the acetic fermentation will come.

If you do not care to make so much vinegar, you may be able to save a part of that honey. That which is at the bottom of the pails is bound to be thicker and better. So you may use only the thin honey for vinegar, then melt the other slowly over hot water, which will help evaporate any ferment that may exist in it. Do not heat it over 160 degrees. You will find it much thicker than before, after it cools down, for some of the moisture it contains will evaporate during the heating.

You may make vinegar out of a liquid containing only 1 pound of honey to the gallon, but we have never thought it was strong enough.

### Dead Brood—Miscellaneous Questions

1. Is there ever any dead brood in a healthy colony not affected with foulbrood?
2. When is the best time to requeen or Italianize?

What plan would you recommend for transferring a colony from an old box hive, and what time of year?

4 When there is some dead brood that is about ready to emerge, is there danger of disease of any kind?
5. Is there any kind of disease that affects the brood when it is almost ready to emerge? MISSOURI.

Answers.—1. Yes, there may be starved brood or chilled brood. In either case, it usually dies in large patches, all at one time, while the brood which has died from foulbrood dies in irregular spots, one here and one there, till all are dead, but at different stages of growth.

2. Requeen or Italianize at any time during the summer. It is better to do it during the honey crop, because at that time the bees accept a new queen more willingly.

3 It would take several pages to give explicit instructions on transferring bees. It had best be done in spring at the time of full bloom of fruit. But it may be done at any time if you do not care to save the combs.

4 and 5. American foulbrood attacks brood after it is sealed in the cell, but not when it is "just ready to emerge." Get a text book and learn to recognize the difference between the different brood diseases.

### Getting Bees From Trees

The writer has just come into possession of a piece of country property which has six colonies of yellow bees (the oldest 3 years old) in large oak shade trees, which to cut down would hurt the appearance of the grove. Scaffolds can be built so as to cut into hollow of tree and get the honey. I would like very much to drive the bees into hives and try to save them. Will you please refer this letter to the right department with request that I be advised as to best way to get bees into hive and whether or not July 15 will be too late for them to be transferred? ALABAMA.

Answer.—It is difficult to advise correctly, as we are not acquainted with the position of the bees, height of tree at the hole, etc. Assuming, however, that the bees are within reach with an ordinary scaffold or table, I would advise that you cut a hole above the swarm. The hole through which they enter is usually at the base, but if the swarm should be below the entrance, then cut the hole at the lowest point, where the swarm is, so as to have one hole above and one below.

Then, with a bee smoker, drive the bees out by forcing smoke at the lower hole. If you do it right, by not giving too much smoke at first, and if you place a hive above the upper hole, the bees will crawl out in mass and will readily cluster in the hive in question, provided the smoke does not also enter it.

After driving the bees, open the cavity, remove the combs and fasten into frames, for the use of the bees, all the worker brood and as much of the honey as may be handled unbroken. With this method, if the weather is not too hot for handling the combs, you may transfer the bees into good hives, with enough honey to winter them. We cannot advise you as to the best time to do it, as we are not acquainted with the best honey season of your locality.

### Requeening

I have been attempting for two years to requeen some colonies of hybrid bees which I have with Golden Italians, but they are very defiant and obstinate in the matter and kill the new queen each time.

I have your book, "One Thousand Questions and Answers," and have followed all the different methods very closely and carefully, but cannot have them accepted successfully. I have twenty colonies which I wish to requeen in an outyard, and have a few fine golden ones in my back yard in the city, from which I expect to raise the queens to requeen the outyard.

After raising the queens and having them mated in the nucleus hive, could I shake the adhering bees from the brood frames in hives in the outyard and then add these frames to the nucleus? Of course, I would close the entrance to a small opening for some time. I would place the hybrid bees on empty comb in same hive as before and place on the old stand. In three weeks I could repeat this operation and place these frames in another hive body and place this body over the nucleus, and in this way could have a populous colony for winter. I have plenty of frames of honey to add for winter feeding in case of no fall flow. I run the hybrids for extracted honey this year and have about 150 full-depth frames full. I also have a good cellar in which to winter them. If I wished, I could let the hybrids die this winter if I succeeded in this plan. What do you think of this plan?

Could I do the following, if I do not succeed in raising enough queens of my own, purchase new queens and release them from their cage on a full frame of hatching brood from the hybrids, with all adhering bees brushed off, and place this frame in a hive-body over a colony with a screen between them so they will be kept warm for a week or so and then remove to a stand of its own and then proceed as above? OHIO.

Answed.—If I understand you correctly, what you propose to do, instead of introducing queens, is to strengthen the nucleus in which such queen is reared until it makes a good colony. That is all right and very practical.

The releasing of queens on frames of hatching brood is also very practical. The method of introduction used by most people by caging the new queen after killing the old one and keeping the new queen between two frames of brood for 2 days is quite simple. But since you do not appear to succeed with it, the methods you suggest will both do.

### Keeping Comb Honey

Is is necessary to treat comb honey, if kept in a room where there are no flies or millers, and if nothing shows up in the way of moths after it has been off the hives for two or three weeks?

What about using the method of G. H. Cale, explained in the July number of the American Bee Journal? Would carbon bisulphide be all right to use in that case? Is there any danger of it coloring the honey combs as there is from the smoke of sulphur settling on them?

I haven't a large stock of como honey, but am selling some to private customers which they will keep for many months, and don't want moths to hatch out in it after it leaves my hands. SOUTH DAKOTA.

Answer.—It is always best to fumigate comb honey after it is removed from the hive, although if it is taken from a strong colony and placed away from exposure to moths without delay, there may be but very little danger of moth larvæ hatching in it. Usually the eggs which are laid by the moths are about the edge of the sections, and if these are scraped at ounce it may remove the eggs that may have been laid on their edges.

Mr. Cale's advice is good. Bi-sulphide is easier to use than sulphur. There is very little danger of coloring the combs, even with sulphur smoke, for it is not the smoke which is expected to kill the moths, but the gas formed from combustion.

A very small number of moth larvæ will damage the sale of comb honey, so it pays well to be careful about it.

### Bees and Grapes Again

A friend of mine said, the other day, that he wished I would move all my bees out in the country, for when his grapes got ripe the bees would sting the grapes and then turn around and suck out the juice. He also said that last year he bet he poisoned 10,000 bees with poisoned water around his few grape vines, from his kitchen door to the coal shed on the alley.

I told him I thought the birds were the first ones to pick the grapes, leaving an opening in the skin so the bees would work on them.

It has been tried in the courts in California, but I do not remember what the result was. I hope there is a law some day fining people for poisoning bees in fruit bloom or any other time. I hope there is a honey flow when the grapes get ripe, so they will not bother them. My bees have done fine this year, so far.

KANSAS.

Answer.—That friend of yours would probably deny having said that he managed to poison 10,000 of your bees intentionally, if he should be called before a court, for when a man is mean enough to do that, he is mean enough to lie about it. There is no doubt that he could be held liable in a court if the intentional poisoning could be proven.

However, this man is also as ignorant as he is mean, for he undoubtedly believed that the bees do puncture fruit. He is like the fellow who denies that the earth turns around the sun or revolves upon itself, because he does not see it move. He takes things for granted which are false. There is one very simple way to convince him, if he is open to conviction. Take a bunch of ripe grapes, puncture two of them, while making sure that there are no other damaged grapes in the bunch; then place them, before his eyes, in a hive of bees, right upon the combs, and leave them there 48 hours. After that time, he will see that the bees have only sucked the juice of the berries that were punctured before they were put in. This ought to convince any sensible man that bees *cannot* damage sound grapes.

As to the bees stinging the grapes, if they would do it, they would insert poison in them and that would make them unfit for either bees or men.

We had to investigate this matter thoroughly for ourselves, for we had a number of irascible neighbors who took it for granted that we were getting rich out of their grapes, by our bees puncturing them and helping themselves to the sweet juice. On the contrary, we were losing bees, and the juice which they were storing in lieu of honey made them sick in the winter. So we have as much reason to keep the bees out of the grapes as the other man has. This was in 1879. But our neighbors were so fully convinced that we were right and that our bees *could not* injure sound grapes that we have never had any trouble since.

Some men will tell you that the bees always make two holes in the berry, one just above the other. Those holes are made by the beak of the bird, when eating. Of course some grapes also crack open, in moist weather, and others are punctured by hornets, which have saw-like teeth, entirely unlike the smooth jaws of honeybees. That the bees cannot injure sound fruit is a proven fact, but there are people who would very much dislike to see it proved, for they delight in holding some one responsible for their bad luck.

## ODDS AND ENDS

### Indiana News

The July letter of the Secretary of the Indiana Beekeepers' Association is at hand. It breathes activity and accomplishment. With only three inspectors at work, 1,262 apiaries, totaling 10,491 colonies, were inspected from May 25 to July 4.

Both American and European foulbrood are being overcome, according to Mr. Yost. With larger funds available for 1922, it is hoped to carry the inspection campaign near a successful termination.

Organized county associations are helping the good work.

### Bees Trained to Answer Signal

London, July 6.—The sound of a gong is the signal for a large swarm of bees to begin and end their daily labors at Fleet, Hants, says the Daily Mail.

Trained by Mr. Alder, the bees wait for the order to start work at 6 a. m., and at the sound of the monotonous bangs on a metal dish the swarm starts from the hives.

Working all day among the lime trees which surround the estate, the bees cease their labors when the time gong sounds, like so many human beings. An hour afterwards the bees are sent to bed by a soft note from the gong.

The above is from a Toronto paper.

I think the owner of these bees might hang a pencil on a string to each hive and have the workers mark up the quantity of honey brought in on each trip. One of the drones could then figure up the grand total at the end of the day. This would give the queens something to gossip about as they strolled up and down in front of the hives in the cool of the evening.

Fred Osler.

### Changes at Ames

The beekeeping work at the Iowa Agricultural College has recently been rearranged so that Prof. F. B. Paddock will in future spend all his time with teaching and investigational work. The extension work in connection with the position of State Apiarist has been so heavy that it could well occupy the entire time of the person responsible for it. We have not as yet seen any announcement as to who has been selected for the position of State Apiarist. Our Iowa readers will be glad to note that Professor Paddock is to remain at Ames and that his entire time will be spent in the service of the beekeepers, although the work is to be divided to give him more time to devote to teaching.

### Value of Bees in U. S. A.

Completed census reports give the total value of bees in the United States at $16,855,251, as compared to $10,373,615 in 1910. California and Texas lead the list, with over a million dollar valuation for each, with New York, Pennsylvania, Illinois, Tennessee, Iowa and Missouri following in the order named.

### Lower Freight Rate

A recent news item conveys the information that the freight rate on honey from Pacific Coast points to the Atlantic seaboard has recently been lowered 10 cents per 100 lbs. in car lots.

### Millen in England

F. Eric Millen, Provincial Apiarist of Ontario, with headquarters at the Agricultural College at Guelph, is enjoying a two-months' vacation in England, his native land. He expects to return early in September to continue his school work at the College.

## BEES ON FARMS IN THE UNITED STATES AND PRODUCTION OF HONEY AND BEESWAX

Preliminary report of the number of bees in the United States and production of honey and wax, for both 1910 and 1919 are now available. We believe they are sufficiently interesting to our readers to be reproduced here.

Unfortunately, no bees and no honey production was reported for cities. This would make quite a difference in the totals as reported; just how much, it is difficult to say.

### Bees on Farms

The number of hives of bees on farms in the United States on January 1, 1920, according to the Fourteenth Census, was 3,476,346, as compared with 3,445,006 in 1910, showing an increase of 31,340, or 0.9 per cent. In making comparisons between these two years the change in the date of enumeration from April 15 in 1910, to January 1 in 1920, should be taken into consideration. Especially in States where the winters are severe, the number of hives of bees on farms in April of any year is likely to be considerably less than the number in January. In such States the 1920 figures may be somewhat too high for a fair comparison with 1910. It is probable, therefore, that a count of the hives of bees in April, 1920, would have shown a decrease, as compared with the number in 1910, rather than even a slight increase.

The States reporting the largest number of hives of bees on farms on January 1, 1920, were Texas, with 235,111; Tennessee, with 191,898; California, with 180,719; North Carolina, with 163,956; Illinois, with 162,630; Missouri, with 157,678; Kentucky, with 156,889, and Alabama, with 153,766. These eight States are the only ones which reported over 150,000 hives of bees in 1920. Tennessee showed the greatest absolute increase, with 47,417 more hives of bees in 1920 than in 1910, and Oklahoma was second, with 27,330 more hives in 1920 than in 1910.

### Honey and Wax

The production of honey in 1919 was 55,261,552 pounds, as against 54,814,890 pounds in 1909, an increase of 0.8 per cent. The production of honey is fairly uniformly distributed throughout the United States. Six States reported more than 2,000,000 pounds of honey produced in 1919, as follows: California, 5,501,738 pounds; Texas, 5,026,095 pounds; New York, 3,223,323 pounds; Iowa, 2,840,025 pounds; Wisconsin, 2,676,683 pounds, and Colorado 2,493,950 pounds.

California, although ranking first in 1919 and 1909 in amount of honey produced, reported 4,762,977 pounds less in 1919 than in 1909, this being a decrease of 46.4 per cent. Texas showed the greatest absolute increase in production of honey, with 1,932,998 pounds more in 1919 than in 1909. Other notable increases were in Washington (1,092,626 pounds) and Wyoming (945,349 pounds).

The production of wax was 826,539 pounds in 1919, as against 904,867 pounds in 1909, representing a decrease of 78,328 pounds, or 8.7 per cent.

**Bees on Farms in the United States, 1920 and 1910, and Production of Honey and Wax, 1919 and 1909, by Geographic Divisions and States**

| DIVISION AND STATE. | BEES ON HAND (HIVES). | | HONEY PRODUCED (POUNDS). | | WAX PRODUCED (POUNDS). | |
|---|---|---|---|---|---|---|
| | 1920 (Jan. 1) | 1910 (Apr. 15) | 1919 | 1909 | 1919 | 1909 |
| United States | 3,476,346 | 3,445,$$6 | 55,261,552 | 54,814,890 | 826,539 | 904,867 |
| GEOGRAPHIC DIVISIONS: | | | | | | |
| New England | 41,073 | 40,627 | 653,258 | 594,117 | 7,546 | 8,251 |
| Middle Atlantic | 262,728 | 291,659 | 4,996,894 | 5,184,165 | 65,349 | 66,393 |
| East North Central | 556,344 | 545,938 | 7,313,401 | 7,778,545 | 93,983 | 132,735 |
| West North Central | 503,451 | 546,693 | 6,917,867 | 6,744,608 | 81,800 | 93,633 |
| South Atlantic | 613,171 | 678,439 | 6,579,735 | 7,362,640 | 111,613 | 172,996 |
| East South Central | 585,323 | 506,962 | 5,653,218 | 4,477,759 | 105,281 | 111,369 |
| West South Central | 425,408 | 379,842 | 6,422,883 | 4,486,980 | 116,757 | 92,177 |
| Mountain | 206,059 | 172,654 | 8,746,786 | 6,577,800 | 108,558 | 88,447 |
| Pacific | 282,789 | 282,192 | 8,027,510 | 11,608,276 | 135,652 | 138,866 |
| NEW ENGLAND: | | | | | | |
| Maine | 12,639 | 7,592 | 209,072 | 112,051 | 2,387 | 2,260 |
| New Hampshire | 4,191 | 4,644 | 49,512 | 65,038 | 386 | 792 |
| Vermont | 10,024 | 10,215 | 234,326 | 160,283 | 2,137 | 2,899 |
| Massachusetts | 6,573 | 7,464 | 70,769 | 96,802 | 1,312 | 1,019 |
| Rhode Island | 686 | 1,267 | 6,488 | 14,221 | 5, | 185 |
| Connecticut | 6,960 | 9,445 | 83,091 | 145,722 | 1,267 | 1,096 |
| MIDDLE ATLANTIC: | | | | | | |
| New York | 127,858 | 156,360 | 3,223,323 | 3,191,738 | 41,178 | 43,198 |
| New Jersey | 12,451 | 10,484 | 157,717 | 152,072 | 2,544 | 1,372 |
| Pennsylvania | 122,419 | 124,815 | 1,565,854 | 1,840,360 | 21,627 | 21,823 |
| EAST NORTH CENTRAL: | | | | | | |
| Ohio | 105,675 | 98,242 | 835,894 | 1,001,179 | 10,790 | 7,454 |
| Indiana | 87,045 | 80,938 | 582,380 | 687,097 | 8,115 | 15,115 |
| Illinois | 162,630 | 156,846 | 1,896,996 | 1,428,640 | 21,908 | 26,240 |
| Michigan | 93,348 | 115,274 | 1,321,448 | 2,507,810 | 20,304 | 28,524 |
| Wisconsin | 107,646 | 95,638 | 2,676,683 | 2,153,819 | 32,866 | 55,402 |
| WEST NORTH CENTRAL: | | | | | | |
| Minnesota | 67,344 | 56,677 | 1,251,102 | 976,262 | 15,470 | 16,880 |
| Iowa | 138,319 | 160,925 | 2,840,025 | 2,374,080 | 33,041 | 44,266 |
| Missouri | 157,678 | 203,569 | 1,220,611 | 2,105,815 | 18,172 | 23,784 |
| North Dakota | 708 | 495 | 12,814 | 11,084 | 183 | 92 |
| South Dakota | 17,032 | 6,565 | 372,092 | 139,714 | 3,750 | 943 |
| Nebraska | 41,033 | 45,625 | 623,348 | 527,868 | 6,144 | 3,336 |
| Kansas | 81,337 | 73,737 | 597,875 | 609,785 | 5,040 | 4,332 |
| SOUTH ATLANTIC: | | | | | | |
| Delaware | 2,976 | 6,410 | 27,703 | 62,777 | 317 | 2,756 |
| Maryland | 16,117 | 23,156 | 215,685 | 306,367 | 1,947 | 4,358 |
| District of Columbia | 19 | 151 | 315 | 3,657 | ..... | ..... |
| Virginia | 104,267 | 104,005 | 1,267,300 | 1,344,360 | 19,441 | 23,883 |
| West Virginia | 89,873 | 110,673 | 919,689 | 1,550,739 | 7,786 | 11,090 |
| North Carolina | 163,956 | 189,178 | 1,341,002 | 1,809,127 | 23,209 | 76,400 |
| South Carolina | 58,028 | 75,422 | 441,684 | 653,119 | 7,866 | 12,440 |
| Georgia | 136,698 | 130,549 | 1,403,869 | 884,662 | 28,053 | 23,443 |
| Florida | 41,237 | 38,895 | 962,488 | 747,832 | 22,994 | 18,635 |
| EAST SOUTH CENTRAL: | | | | | | |
| Kentucky | 156,899 | 152,991 | 1,604,519 | 1,558,670 | 15,521 | 17,307 |
| Tennessee | 191,898 | 144,481 | 1,969,425 | 1,468,123 | 27,669 | 28,864 |
| Alabama | 153,766 | 135,140 | 1,347,644 | 891,954 | 41,272 | 50,043 |
| Mississippi | 82,779 | 74,350 | 731,680 | 559,012 | 20,819 | 15,155 |
| WEST SOUTH CENTRAL: | | | | | | |
| Arkansas | 112,475 | 92,731 | 791,598 | 913,515 | 12,359 | 20,403 |
| Louisiana | 31,079 | 29,591 | 247,513 | 340,134 | 7,660 | 12,284 |
| Oklahoma | 46,743 | 19,413 | 357,677 | 140,234 | 2,916 | 1,088 |
| Texas | 235,111 | 238,107 | 5,026,095 | 3,093,097 | 93,822 | 58,402 |
| MOUNTAIN: | | | | | | |
| Montana | 11,918 | 6,313 | 630,608 | 183,510 | 7,682 | 594 |
| Idaho | 35,900 | 21,903 | 1,208,229 | 1,011,068 | 16,653 | 8,018 |
| Wyoming | 14,022 | 4,596 | 1,084,273 | 138,924 | 11,257 | 1,563 |
| Colorado | 63,253 | 71,434 | 2,493,950 | 2,306,492 | 28,282 | 33,682 |
| New Mexico | 15,733 | 10,052 | 593,290 | 439,528 | 7,051 | 5,345 |
| Arizona | 28,174 | 23,770 | 926,621 | 1,025,282 | 10,783 | 15,012 |
| Utah | 25,061 | 26,185 | 1,232,239 | 1,138,091 | 18,933 | 16,667 |
| Nevada | 11,998 | 8,401 | 577,576 | 354,905 | 5,917 | 7,766 |
| PACIFIC: | | | | | | |
| Washington | 56,806 | 33,884 | 1,596,206 | 503,580 | 17,420 | 4,038 |
| Oregon | 45,264 | 47,285 | 929,566 | 839,981 | 11,436 | 8,383 |
| California | 189,719 | 201,023 | 5,501,738 | 10,264,715 | 106,796 | 126,445 |

### Another Edition of Cowan

The British Bee Journal announces in a recent number a new edition of Cowan's "British Beekeepers' Guide Book." This is the twenty-fourth edition of this book in the English language. The Guide Book has gone through more editions and been translated into a larger number of languages, probably, than any other book on bees.

### Bee Specialist for Washington

Burl A. Slocum has been appointed Bee Specialist in the State of Washington. His time will be equally divided between the Division of Apiculture of the State College of Washington, under Dr. A. L. Melander, and the Extension Service, under Dr. S. B. Nelson. Mr. Slocum is a graduate of the University of Wisconsin in the Beekeeping Course.

### Bees Decreasing in South Carolina

There are only 58,028 colonies in South Carolina, as compared to 75,422 ten years ago. The per colony average for 1919 was 8 pounds, or a total of 441,684 pounds.

### Beekeeping in Virginia

Virginia produced 1,267,300 lbs. in 1919 from 104,267 colonies of bees, or an average of 11 lbs per colony. There was an increase of only 262 colonies since the 1910 census was taken.

### The League

The many friends of E. G. Le Stourgeon, President of the League, will be pleased to learn that he has been chosen as a member of the Texas State Legislature. Mr. LeStourgeon did not seek this office, but had it practically thrust upon him by his friends. As he is called on every session of the Legislature to give advice, his friends thought the best thing to do was to give him a vote as well as a chance to talk.

It looks like the beekeepers are coming into prominence in many ways. No sooner had Rochester, N. Y., started a move to prohibit the keeping of bees in its limits than New Boston, Ill., took up a similar movement, and now Chicago follows suit. The League is helping the fight against these ordinances.

One of the most hopeful features of the League is that the allied trades and the individual beekeeper are coming to the rescue of the League. Next month we hope to publish a financial statement of the League's current expenses. This will show just how the money is being spent and how badly more is needed.

Colin P. Campbell writes that the 2½-cent rate on honey in the Fordney bill is in line with that on other commodities, and that any attempt to have this rate increased will only open the door to the opposition and most probably to reduction. Every beekeeper should write or telegraph his Senator and Representative to support the proposed tariff on honey as it now stands in the Fordney bill.

### Texas Beekeepers Meet

The Texas Beekeepers' Association held its 28th annual summer session at College Station, July 26, 27 and 28. As it was conducted during the Farmers' Short Course, it had the form of a school rather than that of an ordinary association meeting. One very notable fact was that all attending the course were present at every session, from the beginning unto the ending of the meeting. The school was started with the lecture by Dr. L. H. Pammell, of Ames, Iowa, on "The Relationship Between the Honeybees and the Pollination of Farm Crops." Dr. Pammell at one time was a member of the faculty of the Texas A. & M. College and called the attention of the beekeepers to the large number of observations he had made on the value of bees as pollinating agents in Texas. He also called attention to the fact that one market gardener, raising cucumbers under glass, had this spring purchased 200 pounds of live bees to keep in his greenhouses, having no other object than to secure the proper pollination of the cucumber plants.

Dr. M. C. Tanquary, of the Experimental Station, gave an outline of the work which is being done for the beekeepers by the Experiment Station, going into detail with reference to the foulbrood work.

E. C. LeStourgeon, Manager of the Texas Honey Producers' Association, told the school of the market situation and of what had been accomplished and appealed to every beekeeper in the State to help in stabilizing the honey market.

Mr. Lloyd R. Watson gave the beekeepers an excellent account of the behavior of the bees during the swarming period and some results of observations on swarm control in Texas.

Mr. T. W. Burleson, of Waxahachie, gave a full account of shipping bees in combless packages and carefully explained each step in his system, and gave excellent advice to beginners in the combless package business.

Mr. C. S. Rude, State Apiary Inspector, gave a summary of the results of the work in foulbrood eradication for the past three years and showed very definitely from statistics that foulbrood can be controlled and eradicated if the beekeepers will cooperate with the inspectors. Mr. Rude gave some very definite figures relative to the results obtained in counties where foulbrood has been prevalent in the past and stated definitely the policies of his department.

Mr. E. B. Ault, of Calallen, gave his system of apiary management and explained to the beekeepers how system was absolutely necessary to get results in managing any number of colonies of bees.

Mr. E. W. Atkins, of the G. B. Lewis Company, gave very briefly the advantages of standard equipment. He stated that the kind of a hive had little to do with the amount of production, that it was the beekeeper and his management that governed the amount of honey obtained. He further stated that no matter what hive a man used, whether home-made or factory-made; that he should have for his own yards a standard equipment and, of course, if the standard equipment used is also the standard of his neighbors, that it would be to his advantage in that he could buy and exchange bee fixtures if such a thing would become necessary, with the least possible trouble. He stated that the use of the standard equipment saved the beekeeper one-third of his time.

W. O. Victor, of Uvalde, gave an excellent summary of a year's work in beekeeping and told the beginners or unsystematic beekeepers the absolute importance of doing certain things at stated, definite periods. Mr. Victor is looked upon as being one of the best instructors in beekeeping in the State.

R. R. Reppert, Extension Entomologist, told the beekeepers of their relationship to the beginners in beekeeping and box-hive beekeepers and asked for the support of the Beekeepers' Association to help in bettering the conditions of beekeeping throughout the State and to help in the securing of one man in the Extension Department to devote his whole time to extension work in beekeeping.

A. H. Alex, queen breeder for the Experiment Station, told of the work in the experimental queen yard and gave a system of queen raising for the individual beekeeper.

Louis H. Scholl, of New Braunfels, gave a summary of his system of beekeeping, which is grouped about the divisible brood-chamber, and told of its developments. He stated that after seventeen years of commercial bee work in which the divisible brood-chamber was used, that he was now a stronger believer in this form of hive than he ever had been.

H. B. Parks, Secretary of the American Honey Producers' League, spoke on the relationship of bees to their locality, stating that the beekeeper must know his territory and must know the relationship that exists between the bees, the flora, the climatic conditions and geographical locations before they can rightly handle the problems of beekeeping. He stated, further, that the Isle of Wight disease would have been explained long ago if locality had been studied as diligently as disease symptoms. He advanced the theory that the mite causing this disease was an active parasite on some solitary bee in the Isle of Wight, and attacked the honey bee upon its introduction to that island. In light of this fact, investigators in the diseases of bees should not limit their study to the honeybee, but should also carefully study the closely related forms.

W. A. Black, of San Antonio, called the beekeepers' attention to their relationship to their communities, and to the State, in matters of local government and the improvement of the political situation of the country, as well as the commercial.

Seventy dollars was subscribed to the Dr. Miller Memorial Fund by beekeepers present who had not already subscribed.

The meeting was voted as a decided success by those present and it was further agreed to meet with the College Short Course again next year.

The officers for the following year are: T. W. Burleson, Waxahachie, Texas, President; Wm. Zimmerman, Vice President; Alma M. Hasslbauer, Secretary-Treasurer; W. O. Victor, Superintendent of Fair Exhibits, and H. D. Murry, Judge of Exhibits.

H. B. Parks.

San Antonio, Texas.

### Pears Two-Thirds Average Crop

The July 1 forecast of production of pears is 9,016,000 bushels for the United States, which is about two-thirds the five-year average, and may be compared with last season's estimated crop of 17,270,000 bushels. Leading producing States include New York, 1,329,000 bushels; California, 2,656,000 bushels; Washington, 1,456,000 bushels; Michigan, 505,000 bushels.—U. S. Market Reporter.

### More Sugar Beets in Germany

The acreage in sugar beets in Germany during 1921 exceeds that of 1920 by 149,730 acres. The total area sowed to sugar beets in 1921 is placed at 813,024 acres, as compared with 668,294 acres during 1920.—U. S. Market Reporter.

### Bee Specialist for Virginia

F. S. Andrews has recently been appointed Bee Specialist of the Extension Department of the Agricultural College at Blacksburg, Va. Virginia is doing much to encourage the development of all lines of agriculture within her borders and we are glad to note that beekeeping will not be neglected.

### California County Crops

In a recent issue we gave figures showing the total honey crop for California in 1919 as 5,501,738 lbs.

Figures are now available for each county. The counties reporting the largest crops are, in order:

San Bernardino County, 536,935 pounds.
Los Angeles County, 519,019 lbs.
San Diego County, 480,165 lbs.
Riverside County, 480,016 lbs.
Contra Costa County, 285,683 lbs.

Those reporting the least crops are, in order:

Plumas County, 1,683 lbs.
Santa Cruz County, 2,646 lbs.
Mariposa County, 2,670 lbs.
Yuba County, 3,344 lbs.

### Bees in Georgia

Georgia reports production of 1,403,869 pounds of honey in 1919 from 136,698 colonies of bees, or a per colony average of 11 pounds. There are more bees in Georgia than in 1919 by 6,000 colonies.

## CLASSIFIED DEPARTMENT

Advertisements in this department will be inserted for 5 cents per word, with no discounts. No classified advertisements accepted for less that 35 cents. Count each initial or number as one word.

Copy for this department must reach us not later than the 20th of each month preceding date of issue. If intended for classified department it should be so stated when advertisement is sent.

### BEES AND QUEENS

ATWATER HONEY—Supply your cu tomers.

CARNIOLANS—Gentle, prolific, wonderful honey gatherers. Descriptive circular free. Untested queens, $1.50 each; $17 per dozen. September is not too late to requeen.
A. G Hann, Glen Gardner, N. J.

FOR SALE—200 colonies Italian bees in 2-story 10-frame hives. No disease. Modern outfit, in A 1 condition. H. A. Jett,
R. 1, Box 155, Tucson, Ariz.

QUEENS from my 315 lb. mother Leather colored, untested, $1.10; 6, $6.
R. Kramske, 1104 Victor, St. Louis, Mo.

FOR SALE—Select golden Italian queens by return mail. Untested, $1.50; $15 per doz. Tested, $2.50. Wallace R. Beaver,
Lincoln, Ill.

BEES—100 colonies for sale.
E. F. Atwater, Meridian, Idaho.

FOR SALE—Highest grade three-banded Italian queens. Select untested, 1, $1; 6, $5.50; 12, $10; 100, $75. Virgins, 45c. No disease, and satisfaction guaranteed.
A. E. Crandall, Berlin, Conn.

FOR SALE—Three-banded Italian queens, untested queens, $1 each; 6, $5; 12, $10. Select untested, $1.10 each; 6, $5.50; 12, $11. Safe arrival and satisfaction guaranteed.
Alabama Bee Co., R. 1, Fort Deposit, Ala.

SWARTS' golden queens produce golden bees of highest quality. Untested, $1.25 each; 6 for $7; tested $3. Satisfaction guaranteed.
D. L. Swarts, Lancaster, Ohio. Rt. 2.

SPECIAL—Leather Italian queens, untested, 90c; two or more, 65c. One to three-frame nuclei, with queen, $3 to $5. Booking orders for 1922 packages nuclei and queens.
Tupelo Honey Co., Columbia, Ala.

FOR SALE—Fine 3-banded Italian queens, untested, $1 each; 50 for $47.50; 100 for $92.50. Curd Walker, Jellico, Tenn.

HARDY ITALIAN QUEENS in Thompson safety introducing cages. Day old, any number, 50c each; untested, $1 Package bees and queens for 1922. Write for prices and discounts on orders booked now.
James McKee, Riverside, Calif.

FOR SALE—20 colonies in 10-frame hives, $10 per hive. Dr. T. A. Kragness,
6031 Wentworth Ave., Chicago, Ill.

THAGARD'S ITALIAN QUEENS—I am breeding from breeders obtained this spring from Italy. Untested, $2 each; 12, $18. Queens from my famous stock, untested, $1.25 each; 12, $11.50.
V. R. Thagard, Greenville, Ala.

FOR SALE—Three-banded Italian queens, $1.25 each; $12 per dozen Tested, $2.
Jul. Buegeler, New Ulm, Texas.

FOR SALE—400 stands clean bees, extracting equipment; good location; for eason write. The Oregon Apiary Co.,
Nyssa, Oregon.

THREE-BAND and GOLDEN QUEENS—Reared in separate yards. Order from us and get pure stock for your summer and fall requeening. At our special price, beginning July 1, untested, $1.25 each; 12, $1.00 each; tested, $2.00 each. We have a good number ready for shipment and will fill your order promptly. Dr. White Bee Co.,
Sandia, Texas.

WE BELIEVE we have the best Italian queens obtainable. Our new system is working wonders. Untested, $1.25; tested, $2.25; virgins, 50c. Am booking orders for 1922.
F. M. Russell, Roxbury, Ohio.

FOR SALE—Golden Italian queens, untested, $1; 6 for $5. Tested queens, $2.
J. F. Michael, Winchester, Ind.

PROMPT SHIPMENT of golden or 3-banded queens. Untested only. One, $1.25; 6, $7; 12, $13. Safe arrival and satisfaction.
Ross B. Scott, La Grange, Ind.

FOR SALE—Pure 3-banded Italian queens, reared from the best honey-producing mothers, mated to pure drones. Untested, each, $1.25; 6, $7; 12, $13. Tested, each, $2.50.
H. N. Boley, Hillsboro, Iowa.

FOR SALE—Three-banded Italian queens, untested, $1.25 each; 6, $7.50; 12, $14. Tested queens, $2.50 each; 6, $15. The above queens are select stock. Safe arrival and satisfaction guaranteed.
Rob't B. Spicer, Wharton, N. J.

MY famous three-banded Italian queens, $1.50 each, 6 for $8, after June 1.
J. W. Romberger, Apiarist,
3113 Locust St., St. Joseph, Mo.

SIMMONS QUEENS, bees and nuclei, goldens and three-band.
Fairmount Apiary, Livingston, N. Y.

HARDY ITALIAN QUEENS, $1 each.
W. G. Lauver, Middletown, Pa.

FOR SALE—Unsurpassed Italian queens, ready June 1; untested, $1.50; 6, $7.50; 12, $14; 50, $55; 100, $105. Tested, 1, $2.50; 6, $13.50. My queens are actually laying before they are sent out.
J. D. Harrah, Freewater, Oregon.

FOR SALE—Hardy northern bred Italian queens and bees, each and every queen warranted satisfactory. For prices and further information write for circular.
H. G. Quirin, Bellevue, Ohio.

BEES AND QUEENS from my Carolina apiaries, progeny of my famous Porto Rican pedigreed breeding stock.
Elton Warner, Asheville, N. C.

FOR SALE—Leather colored Italian queens, tested, until June 1, $2.50; after, $2. Untested, $1.25; 12, $13. Root's goods at Root's prices. A. W. Yates,
15 Chapman St., Hartford, Conn.

FOR SALE—Root's strain of golden and leather-colored Italian queens; bees by the pound and nuclei. Untested queens, $1.60 each; select untested, $2 each; tested, $2.50 each; select tested, $3 each. For larger lots write. Circular free. A. J. Pinard,
440 N. 6th St., San Jose, Calif.

WE are booking orders for our golden Italian queens for spring delivery after April 15. Untested queens, 1, $1.50; doz., $15; select untested queens, 1, $1.75; doz., $18; virgin queens, 1, 75c; doz., $9; tested queens, 1, $3; doz., $36. Safe arrival guaranteed.
Tillery Brothers, Georgiana, Ala.

BOOK YOUR ORDERS for QUEENS now—Goldens, $2; tested, $3; banded, $1.50; tested $2.50; six or more, 10 per cent less.
Clover Leaf Apiaries, Wahoo, Neb.

EDSON APIARIES now booking orders for queen bees for delivery during season of 1921. Prices: One untested queen, $1.75; 50 untested queens, $57.50; 100 untested queens, $100. Orders filled in rotation; first shipments March 1, 1921.
Edson Apiaries, Gridley, Calif.

BEES AND QUEENS from my New Jersey apiary. J. H. M. Cook,
1Atf 84 Cortland St., New York City.

BEES BY THE POUND, ALSO QUEENS—Booking orders now. Free circular gives prices, etc. See larger ad elsewhere.
Nueces County Apiaries, Calallen, Texas,
E. B. Ault, Prop.

TRY my Caucasian queens, $1.25 each; hybrids 35c each. Peter Schaffhauser,
Havelock, N. C.

ITALIAN QUEENS, $1 each, or $10 per doz., after June 1. Will book a few more three-frame nuclei of black or hybrid bees with Italian queen, for delivery after June 15, at $5 each, or 3 lbs. bees on frame of honey for $4.25. These will be fine to winter for early spring work. Otto Diestel, Elza, Ga.

HUMMER QUEENS—Untested, $1 each, $9 per dozen. Tested $1.50 each, $16 per dozen. A trial will convince you that they cannot be beaten. Safe arrival and satisfaction guaranteed. Nuclei at same old price.
Geo. A. Hummer & Sons, Prairie Point, Miss.

FOR SALE—Golden Italian queens, untested, $1.15, 6 for $6.60; 12 or more, $1 each; tested, $2 each; select tested, $3 each; extra select tested, $4 each. No bees for sale.
D. T. Gaster, Randleman, R. D. 2, N. C.

FOR SALE—3-banded Italian queens, untested $1.25 each; 6, $6.50; 12, $12. Select untested, $1.50 each. Satisfaction guaranteed.
W. T. Perdue & Sons,
Rt. No. 1, Fort Deposit, Ala.

FOR SALE—Golden Italian queens, untested, 1, $1.25; 6 $7,
E. A. Simmons, Greenville, Ala.

YOU CAN SAVE queens by using All Right push-in comb introducing cage, 25c, post paid. O. S. Rexford, Winsted, Conn.

ITALIAN QUEENS—Three-banded, select untested, guaranteed. Queen and drone mothers are chosen from colonies noted for honey production, hardiness, prolificness, gentleness and perfect markings. Price after July 1, $1.25 each; one dozen or more, $1 each. Package bees a specialty. Send for circular.
J. H. Haughey Co., Berrien Springs, Mich.

WE are offering for remainder of season our bright Italian queens, untested at $1 each, $10 per dozen, $75 per hundred. We guarantee safe arrival, pure mating and reasonable satisfaction in United States and Canada. Cash must accompany all orders unless parties are known or satisfactorily rated.
Graydon Bros., Rt. 4, Greenville, Ala.

FOR SALE—Burleson's three-banded Italian queens. The kind of bees that get the goods. Guaranteed to please or money back. For balance of season as follows: 1 select untested queen, $1.25, 6 for $7, 12 for $13.50, 100 or more $1 each. Send all orders, together with remittance, to J. W. Seay, manager, Mathis, Texas.
T. W. Burleson, Waxahachie, Texas.

FOR REQUEENING use Williams' heavy laying Italian queens; they produce hardy, hustling three-banded workers. Bred from the best disease-resisting strain, and priced in accordance with the present price of honey. Untested, $1.25, 6 for $6.50, 12 or more $1 each; tested, $2. Satisfaction guaranteed.
P. M. Williams, Ft. Deposit, Ala.

WANTED—We have many calls from educators for copies to complete their files of the older Bee Journals. If you have complete volumes or miscellaneous numbers of any Bee Journals previous to 1900, write us, giving a list, and we will be glad to quote a price. Old bee books, now out of print, are also desirable. We act as a clearing house for thi kind of materials.
American Bee Journal, Hamilton, Ill.

**FOR YOUR 1921 CROP**

Comb honey shipping cases, honey cans, friction top pails. Prices on application.

Early order cash discount on sections, hives, supers, frames, comb foundation and other goods.

Buy now and get supplies ready for 1922. Make out your list and send for our prices.

**AUGUST LOTZ COMPANY, Boyd, Wisconsin**

WE are now equipped to handle your early spring orders for package bees and queens, especially bred for the production of honey. Our queens are bred from the best stock obtainable, and will give satisfaction. Safe arrival guaranteed. Write for prices and terms.
Sarasota Bee Co., Sarasota, Fla.

FOR SALE—Italian queens, untested, 1 for $1.25, 6 for $7, 12 for $13.50. Tested, $2. Mismated queens will be replaced if returned in 30 days; dead queens will be replaced if returned by return mail. I have tested breeder from the A. I. Root Co., and will breed queens from her for those that prefer them to my old strain of hustlers.
R. B. Grout, Jamaica, Vt.

CALIFORNIA ITALIAN QUEENS at special prices. After June 15 and to October 1, 1, $1.25; 6, $7; 12, $13; 25 ond over, $1 each; 100, $90. See larger ad elsewhere. Circular free.
J. E. Wing, 155 Schiele Ave., San Jose, Cal.

NUCLEI—We make a specialty of shipping 2-frame nuclei. Write for special prices for June delivery. Queens at the following prices: Untested, $1.50 each; 6, $8; 12, $15; 50, $60; 100, $100. Tested queens, $2.50 each.
Cotton Belt Apiaries, Roxton, Texas.

LARGE, HARDY, PROLIFIC QUEENS—Three-band Italians and goldens, pure mating and safe arrival guaranteed. We ship only queens that are top notchers in size, prolificness and color. After June 1, untested queens $1.50 each, 6 for $8, 12 or more $1.40 each, 25 or more $1.25 each. Tested queens $3 each, 6 for $16.
Buckeye Bee Co., Justus, O.

## HONEY AND BEESWAX

ATWATER HONEY—Supply your customers.

HONEY—SUPPLY YOUR CUSTOMERS—Finest alfalfa-clover honey, extra strong cases, case of two 5-gal. cans, $12; case of six 10-lb. pails, $7.20; case of twelve 5-lb. pails, $7.80, all f. o. b. here.
E. F. Atwater, Meridian, Idaho.

FOR SALE—Raspberry-milkweed honey in 60-lb. cans. Also light amber honey.
P. W. Sowinski, Bellaire, Mich.

FOR SALE—No. 1 white comb, $6 per case; No. 2 white comb, $5 per case of 24 sections; six cases to carrier. Clover extracted, in two 60-lb. cans to case, 15c per pound; 5-lb. pails, $1 each, 12 to case. Amber baking honey, two sixty-lb. cans to case, 10c per pound; same honey in 50-gallon barrels, 8c.
H. G. Quirin, Bellevue, Ohio.

FOR SALE—New crop choice clover extracted honey packed in *new* cans and cases at wholesale price of $14.85 per case of two 60-pound cans, and $14.40 per case in orders of five cases or more. I will have only a half crop. A few cases of last year's clover honey at 10c. No. 1 comb honey $48 per carrier of 8 cases. No better honey is produced than mine. Sample 20c. J. D. Beals, Oto, Iowa.

FOR SALE—Extra fancy white clover honey, well ripened and put up in new cans, 60 pounds net; per case of two cans, $16. Write for special price on large quantities.
Edw. A. Winkler, Joliet, Ill.

WANTED—Pure white clover extracted and comb honey. Send sample and price wanted.
F. L. Hostetter, Osceola, Mo.

EXTRA FINE white sweet clover honey, new crop, in 5-gallon cans, cases of 2 cans, $15; 1 can, $8. Write for prices on a ton or a car load. Sample 10c. C. S. Engle,
200 Center St., Sioux City, Iowa.

FOR SALE—Extra fine Michigan white clover and basswood honey. Almost water white; indeed, I doubt if the color, body and flavor can be beaten. Put up in 60-lb. cans, 2 to the case, at 16c per pound, or in 5-pound pails, 50 to the barrel, at 17c per pound. Sample 15c.
O. H. Schmidt, Rt. 5, Bay City, Mich.

HONEY FOR SALE—In 60-lb. tins, water white orange, 14c; water white sweet clover, 12c; extra light amber sage, 11c; New York State buckwheat, 10c, for immediate shipment, from New York. Hoffman & Hauck, Inc.
Woodhaven, N. Y.

FOR SALE—Finest Michigan raspberry, basswood and clover No. 2 white comb, $5.50 per case; No. 1, $6; fancy, $6.50; extra fancy, $7, 24 Danz. sections to case. Extracted, 60-lb. cans 15c per lb. W. A. Latshaw, Clarion, Mich.

FOR SALE—Extracted honey. Write for prices. A. L. Kildow, Putnam, Ill.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendering. Fred W. Muth Co.,
204 Walnut St., Cincinnati, Ohio.

HONEY WANTED—Give particulars in first letter. Elton Warner, Asheville, N. C.

## SUPPLIES

ATWATER HONEY—Supply your customers.

SAVE MONEY on your shipping cases, tin and glass honey containers, etc. Our free price list tells you how. If you rear queens for sale, be sure to send for our price card of mailing cages. The Rattray-Hamilton, Co.,
Almont, Mich.

NOVICE EXTRACTORS, $22, Cowan reversible, $30; 100 5-lb. pails, $8.50; 100 10-lb. pails, $11. Wanted—Comb and extracted honey.
R. Kramske, 1104 Victor, St. Louis, Mo.

FOR SALE—A quantity of shipping cases to hold 24 sections 4x5x1½ or 1⅜, with glass, complete, cases of 25 for $10.
A. G. Woodman Co., Grand Rapids, Mich.

FOR SALE—Western beehives, standard sizes, manufactured from red cedar and white pine; odd sizes made to order. Williams Bros.,
5125 82nd St., S. E. Portland, Ore.

EXTRACTOR BARGAINS—New Cowan, takes Jumbo frames, $36. Practically new Novice, $26.
Lorenzo Clarke, Winona, Minn.

WESTERN BEEKEEPERS—We can demonstrate that you can save money on buying bee supplies of best quality. Write for our latest price list.
The Colorado Honey Producers' Association,
Denver, Colo.

HAVE YOU any Bee Journals or bee books published previous to 1900 you wish to dispose of? If so send us a list.
American Bee Journal, Hamilton, Ill.

*Southern Headquarters*

**RELIABLE THREE-BANDED ITALIAN QUEENS**

**BY RETURN MAIL**

For many years queens from our stock have been used and recommended by a number of the largest producers of honey in the U. S. and Canada. We cannot afford to disappoint them, and we will not disappoint you.

Having several hundred colonies in outyards to select the very best breeding stock from, and large well-equipped queen-rearing yards, we offer you something good.

We pay special attention to honey-gathering qualities, but do not forget gentleness beauty, etc. The Back-lot Buzzers like them just the same as the larger producers.

PRICES NOW—Untested: 1, $1.00, 6, $5.50; 12, $10.50; 25, $20.00; 50, $38.00. Tested: 1, $1.75; 6, $10.00

**Prompt service, safe arrival and satisfaction we guarantee**

**W. D. ACHORD, Fitzpatrick, Ala.**

**3-Banded Queens, Package Bees, Golden Queens**

We are booking orders for 1922 delivery. Do not care to accept any more business for 1921 delivery after September 10. We wish to thank our many friends for their kind and, indeed, generous patronage during the present year, and we hope to serve them even better the coming season, 1922. Our bees and service will be better the coming year than ever before. Let us know your wants and get our lowest prices, delivered, safe arrival and satisfaction guaranteed.

**M. C. BERRY & CO.**

**HAYNEVILLE, ALA., U. S. A.**

## FOR SALE

ATWATER HONEY—Supply your customers.

FOR SALE—400 colonies of bees in standard 8 and 10-frame hives; also, 10,000 lbs. of clover-basswood honey in 60-lb. tins.
C. E. Keister, Orangeville, Ill.

FOR SALE—Extra fine clover honey in new 60-lb. cans, two to the case, at $15; also in 30-lb. cans at $3.75 for one can.
Martin Carsmoe, Ruthven, Iowa.

FOR SALE—40 colonies of bees in standard dovetailed hives, with wired frames. Bees healthy. Write for particulars.
Duane Shaw, Palestine, Ill.

FOR SALE—New white clover-basswood extracted honey, 60-lb. cans; buckwheat in 60-lb. cans and kegs. Write for prices.
E. L. Lane, Trumansburg, N. Y.

FOR SALE—66 hives of bees, no disease; 100 bodies, and 1,000 frames in flat; 140 Ideal supers; 110 pounds foundation; 250 chickens; cow, some furniture, etc., located 9 miles from Richmond, Va; for quick sale $1,000.
T. McLaine, Rt. 1, Rio Vista, Va.

FOR SALE—1,000 colonies of bees located around Brawley, Calif., in the Imperial Valley, where crop failure is unknown. Portable Extracting outfit, two autos and one 1½-ton truck, storage tank, honey house and dwelling house. Bees in two-story 10-frame hives; no queen over one year old. This is a going concern and a money maker. If you want an outfit of this size and mean business, come look us over. Half cash, balance as you make it. Reason for selling, going to South America this fall. T., care American Bee Journal,
Hamilton, Ill.

FOR SALE—350 colonies of a fine strain Italian bees; all supplied well with honey. Write for full particulars. Chas. Heim & Sons,
Three Rivers, Texas.

FOR SALE—Cedar or pine dovetailed hives; also full line of supplies, including Dadant's foundation. Write for catalog.
A. E. Burdick, Sunnyside, Wash.

FOR SALE—Comb honey, fancy, $6.50; No. 1, $6. Only in 8 case lots.
W. L. Ritter, Genoa, Ill.

FOR—SALE—Hamburg chickens; rare old violin. Elias Fox, Union Center, Wis.

FOR SALE—"Superior" Foundation (Weed process). Quality and service unexcelled.
Superior Honey Co., Ogden, Utah.

## WANTED

ATWATER HONEY—Supply your customers.

Wanted—First editions of the noted books on bees. Mrs. M. J. Fox,
Foxden, Peekskill, N. Y.

WANTED—Honey, section, bulk comb and extracted. W. A. Hunter, Terre Haute, Ind.

WE BUY honey and beeswax. Give us your best price, delivered in New York. On comb honey, state quantity, quality, size and weight of sections and number of sections to a case. Extracted honey, quantity, quality, how packed, and send samples.
Charles Israel Bros. Co.,
486-490 Canal St., New York City.

WANTED—Beeswax, also old combs and cappings to render on shares; will buy your share and pay the highest market price.
F. J. Rettig, Wabash, Ind.

WANTED—Light extracted in 60-lb. cans. Send sample with price delivered in Chicago.
R. J. Dietmeyer,
8521 S. Sangamon St., Chicago, Ill.

WANTED—Extracted honey. Send prices and samples. Will exchange Haywood vulcanizing outfit for honey, worth $4.50, with tools and equipment. Chris Bahr, Cathay, N. Dak.

WANTED—Beeswax, old combs and cappings for rendering on shares Also wax accepted for trade. Top market prices offered.
A. I. Root Co., Council Bluffs, Iowa.

**MONEY SAVED IS MONEY MADE**

*Why haven't you clipped this coupon?*

THAT IS WHY YOU WILL WANT TO SEND US THIS COUPON AT ONCE. WE HAVE SOME MONEY SAVING PRICES FOR YOU

**The A. I. Root Co. of Iowa, Council Bluffs, Iowa**

GENTLEMEN: Kindly name your special fall prices on
☐ Eight frame hives, metal cover, complete
☐ Eight frame bodies, with frames, complete
☐ Shipping cases in lots of
☐ Cans, jars and pails, also second hand 5 gal. cans
☐ Honey tanks

☐ As I am anxious to make the most of my honey production, please send me your service bulletin "Bee Topics." I am interested in your September's issue treating principally with market conditions, and your suggestions as to increasing sales. I have colonies ____________ frame hives. For your further information I wish to state that

Name ____________

Address ____________

**THE A. I. ROOT CO. OF IOWA**

**COUNCIL BLUFFS, IOWA**

WANTED—A No. 1 light clover honey; quantity depends on quality. Emil Strudel, 1461 Richard St., Milwaukee, Wis.

WANTED—Bees in colonies, comb and extracted honey. Frank Coyle, Penfield, Ill.

WANTED—Your order for "Superior" Foundation. Prompt shipments at right prices. Superior Honey Co., Ogden, Utah.

## SITUATIONS

ATWATER HONEY—Supply your customers.

WANTED—A man who thoroughly understands the care of bees; a good job for the right party. References required. Address R. T. Parker, 69 Appleton Ave., Pittsfield, Mass.

## MISCELLANEOUS

ATWATER HONEY—Supply your customers.

GRANULATED HONEY SLIPS—Small and neat. They save complaints. Thousands are being sold; 100, 20 cents; 500, 80 cents; 1,000, $1.50. Dr. Bonney, Buck Grove, Iowa.

SAMPLE FREE—They say "It's as good now as when Hutchinson ran it." Under new ownership, our bee journal is growing fast, better every issue, a "different" kind of a journal. Let's get acquainted. $1.50 a year, and worth it.
The Domestic Beekeeper, Lansing, Mich.

LEAGUE EMBLEMS—We still have a number of U. S. Beekeepers' emblems, buttons or pins, bronze or gold. Send 50 cents and get one
American Bee Journal, Hamilton, Ill.

## QUEENS

**I. F. MILLER'S strain Italian Queen Bees, northern bred, for business; from my best SUPERIOR BREEDERS (11 frames brood on April 7), gentle, roll honey in, hardy, winter well, not inclined to swarm, 3-banded; 27 years breeding experience. Satisfaction guaranteed in U. S. and Canada.**
1 unt., $1.25; 6 for $7; 12 for $13
1 sel., $1.50; 6 for $8; 12 for $15
1 test., $2.00; 6 for $11; 12 for $21

**I. F. MILLER, Brookville, Pa.**
**Route No. 2.**

## GOLDEN QUEENS 1921

Golden and three-band queens, untested $1 each, or 6 for $5; $80 per 100. Virgin queens 50c each, or $40 per 100. All orders will be filled promptly, or parties notified just when to look for them. Reasonable satisfaction to everybody.

**R. O. COX, Rt. No. 4, Luverne, Ala.**

"SELL MORE HONEY"

**HONEY** FINEST Michigan Raspberry Basswood and Clover comb and extracted honey. Unexcelled for quality.

| | |
|---|---|
| Crate 6 cases 24 sec. Fancy comb | $39.00 |
| Crate 6 cases 24 sec. A No. 1 co'b | 36.00 |
| Crate 6 cases 24 sec. No. 2 comb | 33.00 |
| Crate 6 cases 24 sec. extra fancy | 42.00 |
| Two cans 120 lbs., extracted | 18.00 |

*Send Today for Free Sample*

**W. A. LATSHAW COMPANY, Clarion, Michigan**

**SHE-SUITS-ME queen-bees, prices for 1921: Untested Italians, $2 each; $1.75 each for 10 or more, prior to June 15. After June 15, 1 to 9 queens $1.50 each, 10 to 24 $1.40 each, 25 and up $1.25 each.**

**ALLEN LATHAM,**
**Norwichtown, Conn.**

# Quality Bee Supplies

**FROM A**

# Reliable House

Without fear or favor, I place my BEE SUPPLIES and SERVICE before you.

It is the small annoyances that often grow into disastrous results. Avoid the so-called "little losses" by using MONDENG'S GOODS.

Quality is first—save time when you put your goods together, by getting supplies that are accurately made. Service is next—no delays when bee supplies are ordered from my factory.

I am ready to meet your urgent needs.

Send for my new price list.

Closing out all Langstroth and Wisconsin hives and supers. Also Langstroth triangular top-bar frames and eight-frame D. T. supers for 4x5 sections. Will sell at cost price. Write for quotations.

**CHAS. MONDENG**
**146 Newton Ave. N. and 159 Cedar Lake Rd. Minneapolis, Minn.**

## Nuclei For Sale—1922 Prices

Book early to get the best shipping dates. Experience has taught us that the three-frame nuclei is the right size to build up for the clover flows of the North, providing you get them by May 15. I make a specialty of the three-frame size, having shipped over 1,200 with only a loss of 6 last season.

Note what one of the largest beekeepers in the North says: "I have no hesitation in recommending you as to ability to put up bees for shipment, or as to your business integrity. Of the 225 nuclei sent to date, every one came through alive and in fine condition." (Name on request.) Although we sold our nuclei at really pre-war prices last season, I am still making a further reduction.

**Price List of Our Goods**

| | |
|---|---|
| 3-frame nuclei hybrid bees, guaranteed pure Italian queen, | $5.00 each |
| 3-frame nuclei Italian bees, with Italian queen | 6.00 each |
| 3-frame nuclei black bees and black queen | 4.00 each |
| Cypress hives, complete, crate of 5 | $13.00 |
| Medium brood foundation, per lb. | .68 |

I am always buying and establishing new yards, is the reason I can sell the black bees with success. Perfect satisfaction guaranteed. Terms one-third down to guarantee acceptance.

**A. R. IRISH, Ludowici, Ga.**

## SEVEN QUEENS

**For $6.00**

Pure mated, gentle 3-band Italian queens, untested $1 each, 7 for $6. Select untested $1.25 each; tested, $1.75.

**Requeen Now**
Orders Filled Promptly.

**D. W. HOWELL, Shellman, Ga.**

## WESTERN BEEKEEPERS!

We handle the finest line of bee supplies. Send for our 68-page catalog. Our prices will interest you.

**The Colorado Honey Producers' Association, 1424 Market St., Denver, Colo.**

## MOTT'S NORTHERN BRED ITALIAN QUEENS

Have a World-wide reputation.
Sel. Unt., 1, $1.25; 6, $7.50; 12, $15.
Sel. guaranteed pure mated or replace, 1, $1.75; 6, $10; 12, $18.
Sel. tested, $2.50 each.
Filling orders by return mail at this present writing by the aid of my Southern branch. Plans, "How to Introduce Queens" and "Increase," 25c.
**E. E. MOTT, Glenwood, Mich.**

**A NEW BEE BOOK**
**"Dadant's System of Beekeeping"**
Send for a copy today.
Price $1.00.

# HONEY

## The World's Best Sweet for Children

NOW IS THE TIME TO SELL YOUR

# HONEY

We are the largest distributors of Bulk Honey imported and domestic in the United States

## WE CAN SELL YOUR HONEY

Write us today, state the quantity and quality, how packed, shipping point and carload and L. C. L. freight to New York and mail liberal size sample. Include in your first letter your idea of price

**PATON & COWELL**
**217 Broadway, New York**

**MR. BEEKEEPER—**

We have a large plant especially equipped to manufacture the supplies that you use. We guarantee all materials and workmanship. We ship anywhere. We allow early order discounts and make prompt shipments. *Write for free illustrated catalog today*

**LEAHY MFG. CO., 90 Sixth Street, Higginsville, Missouri**

**J. W. ROUSE, Mexico, Missouri** **A. M. HUNT, Goldthwaite, Texas**

**TENNESSEE-BRED QUEENS**

**Forty-nine Years' Experience in Queen-Rearing**
**Breed Three-Band Italians Only**

| | Nov. 1st to June 1st | | | June 1st to Nov. 1st | | |
|---|---|---|---|---|---|---|
| | 1 | 6 | 12 | 1 | 6 | 12 |
| Untested Queens | $2.00 | $ 9.00 | $16.80 | $1.50 | $ 8.00 | $14.50 |
| Select Untested | 2.25 | 10.50 | 18.00 | 2.00 | 9.50 | 16.00 |
| Tested | 3.50 | 20.00 | 35.00 | 2.50 | 13.00 | 25.00 |
| Select Tested | 4 00 | 22.50 | 40.00 | 3.00 | 16.00 | 30.00 |

Select tested, for breeding $7.50

The very best queen tested for breeding $15

Capacity of yard 6000. I sell no bees by the pound or nuclei except with high priced tested and breeding queens

Queens for export will be carefully packed in long distance cages, but safe delivery is not guaranteed

**JOHN M. DAVIS, Spring Hill, Tenn.**

Five colonies of your stock produced 2660 finished sections—the best one 616 finished sections
JOHN M. BIXLER, Corning, Iowa, February 1, 1921

**MAKE YOUR BEES PAY**

If you want bigger honey profits, *get the best queens you can buy.* This is the secret of successful bee raisers. Hundreds of America's greatest honey producers order Forehand's 3-banded Italian Queens. Follow their example. Order from Forehand and be sure of satisfactory results. Backed by 28 years' successful experience in queen breeding and honey production. Take no chances. Experimenting is costly. So certain am I that my queens will satisfy you that I will gladly replace unsatisfactory queens delivered in the United States or Canada, or refund your money. You be the judge and jury. Can anything be fairer?

**PRICES—Aug. 1 to Nov. 1.**

| | 1 | 6 | 12 |
|---|---|---|---|
| Untested | $1.00 | | $10.00 |
| Select untested | 1.25 | | 12.00 |
| Tested | 2.50 | $13.00 | 24.00 |
| Select tested | 3.00 | 16.50 | 30.00 |

Bees in 2-lb. packages—1 package, $6; 25 or over, $5.80; 50 or over, $5.40; 100 or over, $5; without queens.

Place your order *now*. Prices low, quality considered. Write for circular and discounts on large orders.

**N. FOREHAND**
**RAMER, ALA.**

Breeder of 3-banded Italian Queens exclusively

**BEE SUPPLIES**

We carry a complete stock of supplies at all times, and can make prompt shipments. Our prices will interest you.

Send Us Your Inquiries
**A. H. RUSCH & SON CO.**
Reedsville, Wis.

**Shrubs and Trees**

That provide Nectar for the Bees and Fruit for the household. No Cash with order. Get our Catalog TODAY.

**PROGRESS NURSERIES**
1318 Peters Ave. Troy, Ohio

**Annual White Sweet Clover Seed**

(James or Alabama Strain)

Start right. Buy your seed from the home of this New Plant.

This clover was discovered growing in Alabama by our Mr. James, in 1919.

Our crop this year was harvested without rain, and we can furnish a very high grade of seed, absolutely pure, grown by us on cultivated lands.

We are offering a limited supply at $2 per pound, delivered. This will be clean, hulled, scarified seed. Germination test must please you. Write for further information as to how to grow, etc.

**F. A. James Clover Seed Co.**
Newbern, Alabama

**QUEENS OF**
**MOORE'S STRAIN**
**OF ITALIANS**

Produce Workers
That fill the supers quick
With honey nice and thick

They have won a world-wide reputation for honey-gathering, hardiness, gentleness. etc.
Untested queens, $1.50; 6, $8; 12, $15.
Select untested, $2; 6, $10; 12, $19
Safe arrival and satisfaction guaranteed.
Circular free.

I am now filling orders by return mail.

**J. P. MOORE, Queen Breeder**
Route 1 Morgan, Ky.

**QUINN'S QUEENS OF QUALITY**

Have no superiors—"There's a reason." Are Mandelian bred, good qualities accentuated. Gray Carniolans, Gray Caucasians, most gentle of all, prolific, hardy, vigorous, disease-resisiting white comb builders—they deliver the goods.

ITALIANS, 3-banded, line-bred, pedigreed; need no boosting; they speak for themselves.

**CHAS. W. QUINN. Sabot, Va.**

**HONEY** **WANTED** **HONEY**

We are in the market for both comb and extracted. Send sample of extracted, state how put up with lowest price delivered Cincinnati. Comb honey, state grade and how packed with lowest price delivered Cincinnati. We are always in the market for white honey if price is right.

**C. H. W. WEBER & CO., 2163-65-67 Central Ave., Cincinnati, O.**

**QUEENS** **PACKAGE BEES** **QUEENS**

**FULL COLONIES AND NUCLEI**

Our bees are hustlers for honey, prolific, gentle, very resistant to European foulbrood, our customers tell us. For years we have been shipping thousands of queens and pounds of bees all over the United States and Canada. We are continually getting letters with statements such as the following: "Well pleased with your stock; best we ever had. The bees we got from you are the tops (best) out of our 225 colonies; bees arrived in fine shape, well pleased," etc. Write for free circular giving details, etc.

We are quoting a lower price for balance of the year, but will still hold up the high standard of Quality First. I have a good proposition for two or three Northern men wanting to come South this fall. Write for particulars.

Queens after July 1st, balance of the year:

| | |
|---|---|
| Untested | $1.35 each, 25 or more $1.00 each |
| Select Untested | $1.50 each, 25 or more $1.25 each |
| Tested | $2.25 each, 25 or more $1.75 each |
| Select Tested | $2.75 each, 25 or more $2.00 each |
| Breeders | $5.00 to $15.00 |

| | |
|---|---|
| 1 pound pkg. bees, | $2.25 each; 25 or more, $2.13 each |
| 2 pound package bees | $3.75 each; 25 or more, $3.56 each |
| 3 pound pkg. bees, | $5.25 each; 25 or more, $4.98 each |

Add price of queen wanted when ordering bees. Safe arrival guaranteed within 6 days of here.

**NUECES COUNTY APIARIES, E. B. AULT, Proprietor CALALLEN, TEXAS**

**HONEY CANS**

Several carloads just received at our Ogden, Utah and Idaho Falls, Idaho warehouses We also manufacture shipping cases and dovetailed beehives. Special prices on request. "Everything in bee supplies." Prompt shipments

**SUPERIOR HONEY CO., Ogden, Utah**
**(Manufacturers of Weed Process Foundation)**

**Three-Banded Leather-Colored Italian Queens**

**Bred from Selected Root Home-bred Breeders**

Our breeding queens are backed by over 50 years' experience in breeding good queens.

| | |
|---|---|
| Untested | 75c each |
| Select untested | $1.00 each |
| Tested | $2.00 each |
| Breeders | $5.00 to $15.00 each |

Pound packages, shipped on comb foundation.

| | |
|---|---|
| 1-lb. package, no queen | $2.00 |
| 2-lb. package, no queen | $3.75 |
| 3-lb. package, no queen | $5.25 |

Nuclei

| | |
|---|---|
| 1-frame, no queen | $2.00 |
| 2-frame, no queen | $3.75 |
| 3-frame, no queen | $5.25 |

**Special prices on large orders and contracts.**

**Root quality bee supplies. We are the bargain house for Southern beekeepers. It will pay you to get our Catalog and Prices.**

**THE SOUTHLAND APIARIES, Hattiesburg, Miss.**

# QUEENS

I hope you will send in your order for some of our High Grade Italian Queens and become one of the large number of our satisfied customers. We are now enjoying a light honey flow from blue vine, making the conditions ideal for producing the very best queens. In addition to this, we give the larvæ the right start in the swarm box and finish the cells in powerful colonies, so populous as to crowd a two-story Jumbo hive. Cells are given to strong nuclei, and the young virgin receives the best care at all times. No queens are hatched in nursery cages. I give the fullest guarantee with every queen sent out, and will gladly replace any that proves other than first-class. If the present favorable weather continues, I will be able to make prompt shipments..

**OUR GUARANTEE:** I guarantee pure mating, safe arrival, and that all queens shall be first class, leaving it to the customer to be the judge.

Half Way Tree P. O., Jamaica, B. W. I.

"Dear Mr. Smith: Received the queen you sent all O. K. She is just splendid and vigorous. I have nearly finished requeening my apiary with the stock I bought from you last year. Their progeny are true to type and color, laying so profusely that I shall have to give them another super besides the brood chamber in which to lay. I must say again how satisfied I am. Very faithfully, Otto Holt."

**Price List for the Remainder of the Season:**

| | |
|---|---|
| One to four, inclusive | $2.00 each |
| Five to nine, inclusive | 1.95 each |
| Ten or more | 1.90 each |
| Our very best breeders | 12.00 each |

**JAY SMITH, Vincennes, Ind.**
**RT. 3**

# SLUM GUM AND OLD COMBS

Worked into beeswax at 5c per pound, minimum charge $1.00. Pay taken from wax

Market price paid for the wax, worked into foundation or trade for supplies.

Working beeswax into foundation is a specialty with us.

Ship to Falconer, N. Y. Mark each package with your name and address both inside and outside.

Write for red catalog of beekeepers supplies and REDUCED price list.

**W. T. FALCONER MFG. COMPANY, Falconer, N. Y., U. S. A.**

*"Where the good Beehives come from"*

# GOLDEN ITALIAN QUEENS

| | Nov. 1 to June 1 | | | June 1 to Nov. 1 | | |
|---|---|---|---|---|---|---|
| | 1 | 6 | 12 | 1 | 6 | 12 |
| Untested | $2.00 | $ 9.00 | $16.80 | $1 50 | $ 8.00 | $14.50 |
| Select Untested | 2.25 | 10.50 | 18.00 | 2.00 | 9.50 | 16.00 |
| Tested | 4.00 | 22.50 | 40.00 | 3.50 | 10.50 | 36.00 |
| Select Tested | 4.50 | 25.00 | 45.00 | 4.00 | 22.50 | 40.00 |

**BREEDERS $12.50 TO $25.00**

10 per cent additional for Exported Queens. Queens for Export will be carefully packed in long distance cages, but safe delivery is not guaranteed.

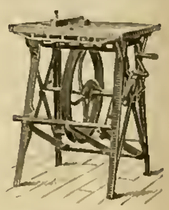
NO NUCLEI, FULL COLONIES OR POUND PACKAGES.

**BEN G. DAVIS, Spring Hill, Tenn.**

# BARNES' FOOTPOWER MACHINERY

Read what J. E. Parent, of Chariton, N. Y says:

"We cut with one of your Combined Machines last winter 50 chaff hives with 7-in. cap, 100 honey-racks, 500 frames and a great deal of other work."



**W. F. & JOHN BARNES**
**995 Ruby St., ROCKFORD, ILLINOIS**

# Crop and Market Report

**Compiled by M. G. Dadant**

Conditions have not changed materially since our last report was issued in August, except that the last few days of July were continued dry, resulting in a minimum of honey storage by the bees.

Reports would seem to indicate that New England will have a fair crop, though hardly up to last year. New York and Pennsylvania reports are spotted, some being good and many very poor. On the whole, these States will do well to average 75 per cent of last year. The crop in the Virginias and Carolinas has been very poor, while Georgia and Florida have had a fair crop. Alabama and Mississippi have a much better crop than last year, due to the fact that sweet clover produced well. Tennessee and Kentucky reports vary, as do those from Arkansas and Oklahoma. Louisiana has had a very heavy flow, though late.

Ohio seems to be having a bumper crop, and Indiana will be at least up to normal. Michigan will probably produce as much as last year, with Wisconsin 50 per cent and Minnesota 25 per cent. Even in South Dakota and Western Iowa, the crop was cut much by drought, while Kansas and Nebraska reports are very good.

The Illinois crop is nil and Missouri only fair, except in the western part. Texas started off badly, but is making up now and will possibly have as much as in 1920. The inter-mountain territory reports are not flattering. Neither this section nor Utah and Nevada will have the crop harvested in 1920.

New Mexico and Arizona are having good flows, probably normal. Washington will be below average, with Oregon probably normal. Northern California, which promised well, is short, but not as short as Southern California. On the whole, prospects are that unless the balance of the season does exceedingly well it is doubtful if there will be over 60 to 70 per cent as much honey produced as in 1920.

### CROP PROSPECTS

Fortunately, late rains have added interest to the balance of the season, though in most instances the rains came so late that they will affect the white crop but little. The whole of the Central West has had bountiful rains and fall flow regions seem hopeful. In our own locality, hardly a pound of white spring honey was harvested outside of the bees' needs, but fall pasturage looks good and the bees are already showing a good surplus. It is doubtful, however, the country over, whether the fall flows will exceed 1920. On the whole, we do not see how they can affect the general average very much.

### JULY CROP REPORTER

The July Crop Reporter of the Department of Agriculture shows an average of 22 pounds per colony up to July 1, compared to 25 pounds last year, or 90 per cent. This is hardly a comparison that will do to use at this late date, however, since the July drought certainly cut the average down greatly. The next report issued should show a greater divergence between the two years.

On July 1 the condition of honey plants was 85 per cent of normal and condition of colonies 78 per cent of normal.

### THE LEWIS REPORT

The G. B. Lewis Company have issued an independent report under date of August 1, based on reports received July 21. These show the crop up to July 21 as being 40 per cent of last year, with 39 per cent of the crop still in prospect. These figures will check up very well with our own. They give condition of bees at 88 per cent of normal.

### ONTARIO CROP REPORT

The Ontario light honey report is out. Replies were received from 442 members owning 21,000 colonies of bees with a total crop of one and one-half million pounds, or a per colony average of about 75 pounds, somewhat better than last year.

Their committee recommends a wholesale price on white extracted of 15 to 18 cents; retail 20 to 25 cents. Recommended prices for comb are: No. 1, $5 to $7 per case; No. 2, $3.50 to $5 per case.

### HONEY SALES AND PRICES

The last week or two have seen an impetus to the demand for honey, with the result that there has been a stiffening in price of the white grades in a jobbing way. Orange prices are higher and white clover and alfalfa show signs of activity. Producers seem a little less inclined to sacrifice in order to induce sales. Amber honeys, however, still show the effects of the competition of foreign honeys, with the result that amber alfalfa is quoted on the Pacific Coast as low as 5¼ cents.

The attitude of producers is encouraging. Evidently the intimation that the tariff revision would soon see in effect a duty on honey and the fact that the fruit is scarce this year, has helped encourage the producing class.

The writer has just finished reading the last issue of "The Packer," probably the most authoritative weekly paper on fruit conditions. The striking feature was the report of short fruit crops from almost all sections except the inter-mountain territory and Oregon and Washington, which may have normal crops. Certainly the fruit crop is going to be very short, and if the beekeepers take advantage of their opportunity by advertising honey, the crop of 1921 should move readily and at good prices. At least we see no reason for rushing honey to market unless prices are satisfactory.

Comb honey is in good demand and should command a remunerative price.

## 10,299
## ITALIAN QUEENS

Reared and sold to August first this season. Our efforts shall always be to furnish as many customers as possible the best Italian Queens at the least possible price.

| | |
|---|---|
| Untested, 1 to 12 | $1.00 each |
| Untested, 12 or more | .75 each |
| Tested, 1 to 12 | 2.00 each |
| Tested, 12 or more | 1.50 each |
| Breeders | $5.00 to 25.00 each |

Return dead and unsatisfactory queens. Can save you money on Cypress Bee Supplies.

**THE STOVER APIARIES, MAYHEW, MISSISSIPPI**

## HONEY

**All sweets have experienced sensational declines**

**The world's supply of sugar is estimated at 1,250,000 tons in excess of requirements.**
**If you have honey, sell it early. If you cannot sell it, WE CAN.**
**Write us and send samples.**
**MONEY for HONEY**

**PATON & COWELL**
**No. 217 Broadway, New York, N. Y.**

## CALIFORNIA ITALIAN QUEENS

The old reliable three-band stock that delivers the goods. This stock is descendant from the A. I. Root Co.'s best breeders. Then the J. P. Moore long tongue, red clover strain was added. Next some of Doolittle's famous stock was secured, one breeder in particular, one which was selected by Mr. Doolittle himself and caged with his own hands a short time before his death, proved extra remarkable. This season the Jay Smith strain has been secured, and these are proving equal, if not superior, to anything I have ever seen. In order to keep running to maximum capacity till fall, I am offering

SPECIAL PRICES FOR JUNE, JULY, AUGUST AND SEPTEMBER

Delivery June 15 to October 1, for orders booked in advance:

| | |
|---|---|
| Select Untested | 1, $1.25; 6, $7.00; 12, $13.00; 25 to 50, $1 each; 100, 90c each |
| Tested | 1, $1.75; 6, $10.00; 12, $18.00 |
| Superior breeder, 1 year old, $5.00 | |

Every queen actually laying before being caged, and fully guaranteed. I also guarantee safe arrival in United States and Canada. Circular free.

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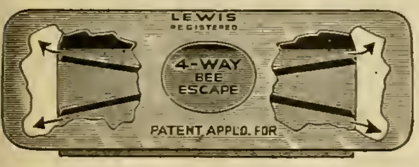
**Lewis 4-Way Bee Escapes**



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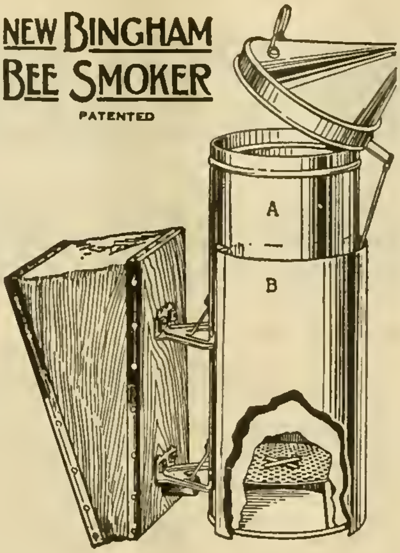

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| Big Smoke, with shield | 4 x10 | 3 |
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| Smoke Engine .............. | 4 x 7 | 2¼ |
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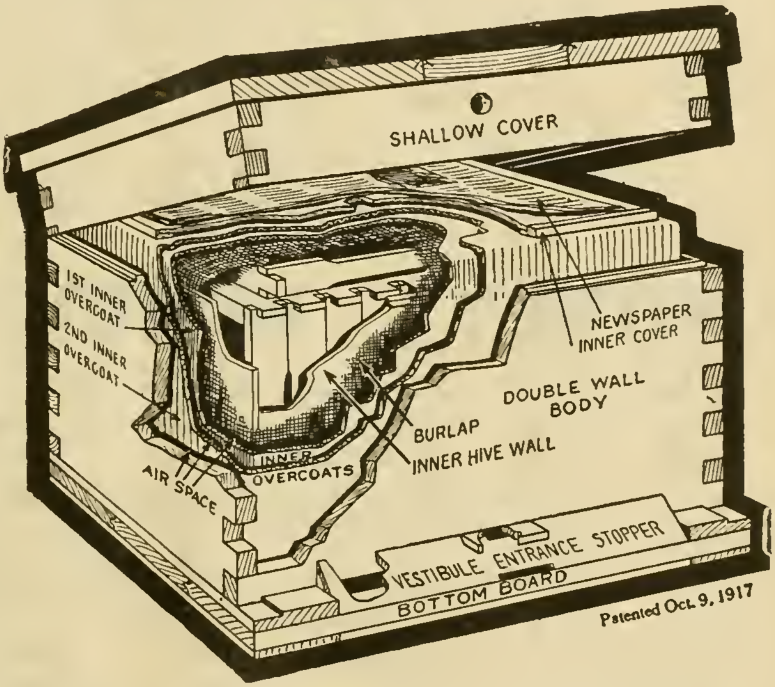

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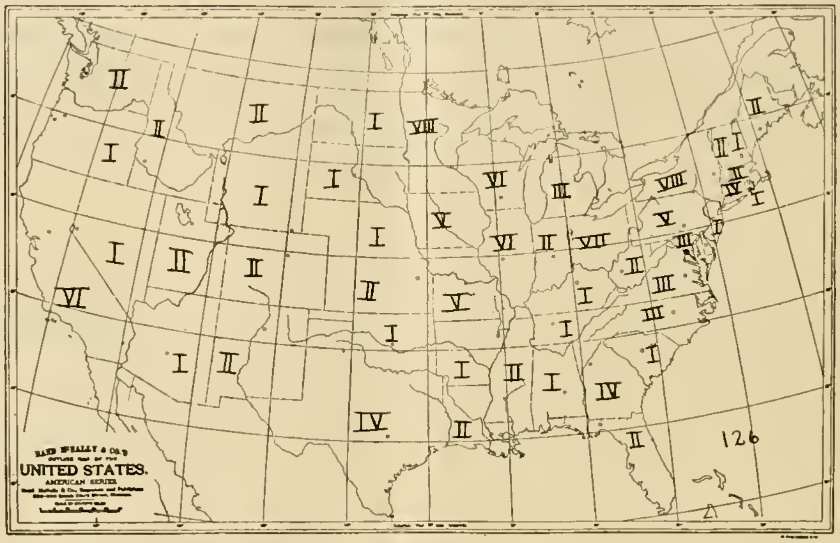
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AMERICAN
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VOL. LXI—NO. 10 HAMILTON, ILL., OCTOBER, 1921 MONTHLY, $1.50 A YEAR

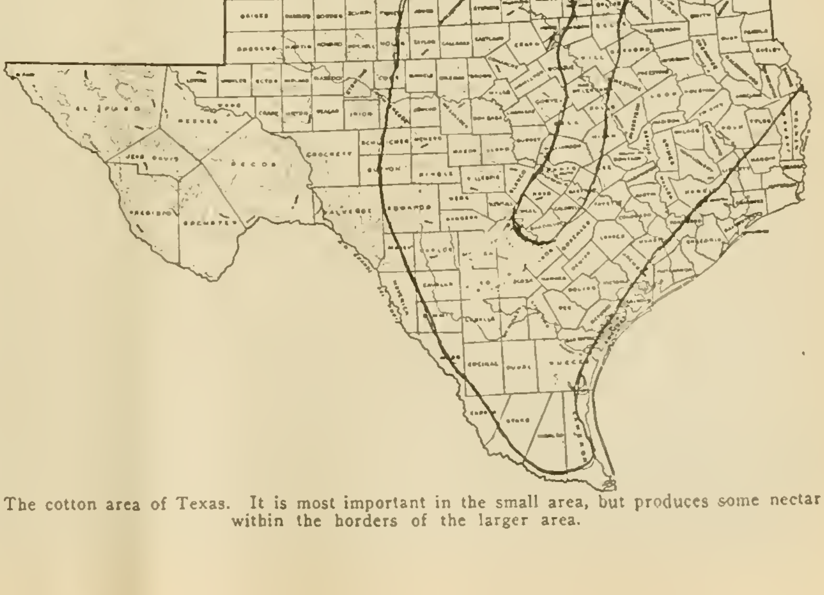
# THE COTTON PLANT AS A SOURCE OF NECTAR

## Notes on the Behavior of the Plant in the Lone Star State, where it is an Important Field Crop—By H. B. Parks

THE relationship between the honeybee and the cotton plant has become a matter of peculiar interest, as in many places honey is a valuable and about the only companion crop of cotton. In the southeastern part of the United States, cotton is looked upon as being a poor honey plant, while in Texas, parts of Oklahoma, Arkansas and the Imperial Valley of California, it is one of the best producers. In these locations, however, it is only in restricted areas that the yield of honey is large. The governing factor of nectar production in the cotton plant seems to be a black, rich soil and a relatively permanent water supply. In many parts of the cotton-producing section, the bee is looked upon as a great aid in the cotton industry, as it is stated that through pollination bees increase the yield about 33 per cent. In other sections, especially where the raising of pure seed is attempted, cotton farmers claim that the honeybee is a nuisance, as it causes the cotton to mix, producing seed not suitable for sale as pedigreed seed.

The plant belongs to a group which is well supplied with nectaries, but, with the exception of cotton, none are noted as honey producers. Cotton is found native in almost every tropical or semi-tropical land, but it seems that the American developed plant is the best yielder of nectar. In Texas, cotton is raised in almost every county. In the counties included within the large area on the map, cotton yields a greater or less supply of nectar. The smaller area outlined on the map includes what is known as the black land, and only within this area is cotton generally a heavy producer of nectar. A study of these soils shows that cotton is commonly nectar-bearing only on soils which have a high per cent of lime and organic matter, and the secretion of nectar is further governed by the permanent supply of moisture. The very fact that there are small, isolated spots where cotton is heavily nectar-bearing substantiates this statement, as these spots which lie outside of the regular black land belt have a soil which answers the above requirement. In this discussion the cotton upon which the observations were made is the standard cotton of the South, which has a white flower that turns red in dying. While the sea-island or yellow-flowered cotton is grown to some extent, it is not regarded as a honey plant in Texas.

As the interest in this question is two-fold, there are naturally two questions that come up for discussion. The first is the amount and dependability of the nectar flow and the second is the value of honeybees to the cotton plant in producing cross pollination. Some explanation is necessary before this question can rightly be discussed. A nectary is a gland on a plant, secreting a thin sugar solution. According to the location, these glands are known as floral and extra-floral nectaries. The former are located within the flower and the latter at some other place on the



The cotton area of Texas. It is most important in the small area, but produces some nectar within the borders of the larger area.

plant. It is thought that the purpose of these glands is to attract insects to the flowers so that cross fertilization may be effected. Both kinds of nectaries occur in the cotton plant. Extra-floral nectaries are found on the mid ribs of the leaves. These glands are diamond-shaped pits located about one-sixth of the distance between the stem and the top of the leaf. Other nectaries, while very closely connected with the flowers, are not true flower nectaries. The flower is enclosed in the ring or involucre of three bracts and rarely a second ring of bracts. At the base of each bract is a large oval gland having an area of about two square millimeters (fig. No. 1). These glands are very conspicuous and often highly colored. This group is popularly known as the "eyes." Within the involucre, a true tubular calyx encloses the flower. At the base of this tube and at the openings between the involucral bracts are located three other nectaries fig. No. 2). These are slightly smaller than the first ring. A row of nectaries is located on the inside of the calyx at the base of the petals. The petals are so arranged that they overlap. These nectaries are indicated by tufts of fine plant hair, located near the base of the petals. On account of the overlap of the petals, the surplus nectar from the calyx glands very often is found within these clusters of hairs. This has given rise to the opinien that the edges of the petals also have nectar-bearing glands. In observing the bees working upon the cotton blossoms for nectar, it appears that they more often insert their tongues between the calyx and the petals to reach this nectar than force their tongues between the petals. Thus it appears that all of the nectar-bearing glands of cotton are, in a way, extra-floral nectaries. In no instance were glands found at the base of the stamen column, which in most plants is the location of the true flower nectaries. In several varieties of cotton, however, purple areas exist at the base of the petals. These areas are similar in shape and location to smaller areas called pathfinders, which exist in other flowers and which indicate the location of the nectary. From the observation given it appears as if the nectaries were arranged to attract the insects from and not into the flower.

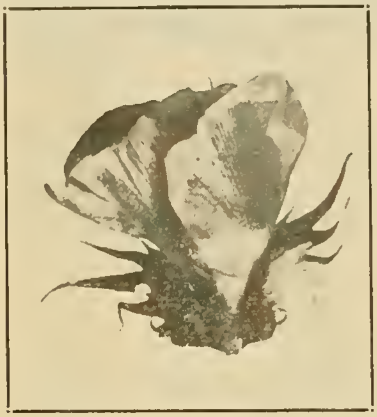


Fig. 1.—Flower of cotton, showing nectary on side of calyx.

Dr. Wm. Trelease, in "Nectar and Some of Its Uses," in Comstock's reports on insects, suggests that this species of cotton has lost its true floral nectaries since its domestication and that, in its wild state, the many extra-floral nectaries were of advantage in attracting insects to the plant, and thus help in pollination. It is learned that plants possessing nectaries, when grown in soil having a normal water content and a high per cent of available plant food, will, during periods when the surrounding air has a high water content, secrete more nectar than under any other condition. As these limitations are descriptive of the area in Texas where cotton is a heavy nectar producer, the above statement is accepted, not as stating the cause of, but as giving the conditions governing heavy secretion.

One of the things greatly desired by the student of floral ecology is some means by which nectar secretion can be detected easily and measured accurately. In the cotton plant the glands are so large they can be easily measured.

| | |
|---|---|
| Area of three glands on involucre | 6 sq. mm. |
| Area of three glands on calyx | 4.5 sq. mm. |
| Area of three glands on petals | 5 sq. mm. |
| Total | 15.5 sq. mm. |
| A normal plant will average 5 blooms per day, 5x15.5 | 77.5 sq. mm. |
| Total area of gland on leaf | 5 sq. mm. |
| A normal plant will average 100 leaves per day, 100 x.5 | 127.5 sq. mm. |

During the blooming period, from June 14 to October 15, (125 days) a surface of (125x127.5) 15,937.5 sq. mm. is exposed. As some plants do not produce flowers or leaves on which all the glands are present and as rainy days prohibit working, this area has been reduced to 100 sq. centimeters. The secreting area of 100 square centimeters is about 15 square inches, or a square about 4 inches on a side. These glands have a total depth of 3 millimeters. The surface is not smooth, but is covered with fine hair, so that it would require a considerable depth of accumulated nectar before the liquid surface, such as is often seen in nectaries would be produced. It requires 5 grams of nectar to produce a continuous layer from a surface 10 centimeters square. Thus a single cotton plant would have on its surface, if the total secreting surface were exposed at one time. 5 grams of nectar. Whether or not the secretion is increased by part of it being removed by the bees is not known. The weight of the raw nectar evaporated into honey of 12 lbs. standard would be 2.5 grams. Thus the bees will have to carry 2½ gallons of nectar to the hive to obtain one gallon of honey. Analysis shows that fresh nectar contains from 17.66 per cent of solid matter, up to 82 per cent, which is the approximate per cent of the solid matter in old honey. This is another and very important explanation as to why some plants are much better honey producers than others. Bees working nectar containing 17.66 per cent would have to collect five times as much material as when collecting 82 per cent nectar, not to mention the time employed in reducing it to the consistency of ripe honey. A peculiar point that arises here is the relationship between nectar with a high water content, cane sugar and fermentation. From analysis at hand, all honeys from watery nectar are high in per cent in cane sugar, and even though they have the same specific gravity as other honeys, are apt to ferment. Cotton nectar does not have a high water content and is of medium thickness. Thus bees will have to gather about twice as much nectar as the resulting amount of honey.

From the data presented above, the honey from a single average plant should be about one-half the weight of the nectar, or 2½ grains. This weight multiplied by 2,500, the average number of plants per acre, gives 6.25 kilos, or 13.7 pounds per acre. While this is wild speculation, it is based on sufficient facts to show why the cotton plant is one of the foremost honey producers. It is further believed, from observations, that the secretion of nectar far exceeds that. The amount of nectar in a certain nectary did not seem to be reduced to any great extent by the working of bees upon it and it seems highly probable that, up to a certain limit, the more the bees work the cotton plant the greater the secretion. Observation made by beekeepers living in the cotton section would lead to the belief that the average production of honey to an acre of cotton is about 28 pounds.

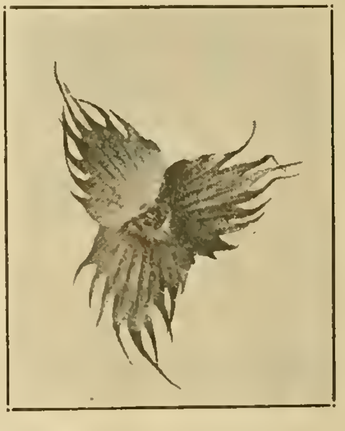


Fig. 2.—Nectaries under cotton square. From these the honey is collected.

While cotton blooms continuously from the middle of June until frost, and the nectaries secrete throughout this time, it has two distinctive blooming periods during which large nectar flows are noticeable. The first occurs when the plant reaches a height of about 2 feet and before the boll-weevil commences to be destructive to the fruits. During this period the greater part of the cotton honey is stored. In some cases and some years the boll-weevil is so destructive that the bolls fall before the "eyes" secrete nectar, and therefore cotton honey is almost a failure. The second period occurs in September or October when, because of the hot, dry weather, the boll-weevil has ceased to work and the cotton puts on what is known as the "top crop" and reaches the "flower garden stage." It is during this period that some extremely heavy yields of pure cotton honey have been stored.

To men who are interested in cotton as well as in bees, the discussion of the second question is also of interest.

The importance of the honeybee as a pollenizer of cotton is also based on the location of the nectaries. Mr. A. Allard, of the United States Department of Agriculture, states that of the number of bees visiting the cotton plant, 8 per cent were honeybees. Of the bees which visit the flowers, one-half were honeybees. He does not describe their visits, but it is safe to say that they were not working the flowers for pollen, but for the nectar which was contained in the tufts of hairs on the petals. Trelease states that more of the bees work only on the proximal ends of the petals of the flowers. Plant breeders state that the cotton plant is self fertilized and that the flowers that open between 7 and 8 o'clock are fertilized by 8:30 or 9 o'clock. In other words, self-fertilization takes place in about one hour after the opening of the flower. It was found here that the cotton flowers open near 1 o'clock, a. m., but that the bees did not commence to visit the plant until 8 o'clock. In observing the cotton blossoms, it was seen that very few honeybees did enter the flower, but that many bumblebees, melissodes and other solitary bees, some beetles and moths, did work inside of the corolla. If one will look at the cotton flower (fig. 4) it can be readily seen that the bee could collect nectar all the way around the stamen column and never come in contact with it. Such bees would, however, have much pollen adhering to their backs. From the open structure of the flowers, it will be seen that a bee would come in contact with the stigmas only when it entered a flower which was partly open, and then it would only touch its under sides and not the back, where the cotton pollen is carried. Bumblebees and other large hymenoptera, on entering the open flowers, touch both stigmas and stamens and thus easily effect pollination. It was further found that cotton plants screened in so that honeybees could not have access to the flowers were perfectly pollinated either by the wind or by the numerous small bees and flies which worked within the cage. As self-fertilization takes place to a high degree in cotton and as honeybees were seen to collect pollen from the cotton blossoms only on rare occasions, it appears that, in collecting nectar, honeybees do not come into close contact with the stamens and pistils. It seems then that this insect is little responsible for cross-pollination in cotton.

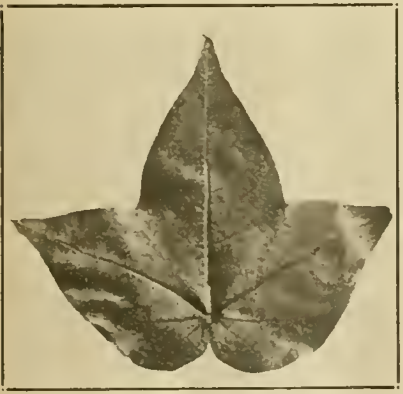


Fig. 3.—Nectary on mid rib of leaf. Some honey is gathered here also

The cotton honey flow outside of the black land area is so uncertain that beekeepers do not count upon it except as a chance addition to the general honey crop, but in the black land the flow is very dependable. The flow commences about the middle of June and continues periodically until the cotton plants are killed by frost. The fact that the honey is very light amber and of fine quality makes it an ideal flow to run for bulk comb honey and one is not far wrong in stating that approximately one-half of this class of honey from Texas is from the cotton plant.

The fact that cotton blooms late in the summer and that, in cotton locations, there is seldom much of an early honey flow, has given rise to the combless package business among the beekeepers of this section. These men allow their bees to go into winter quarters with very heavy stores and in early spring stimulate their colonies by wholesale feeding until they have a very heavy force of bees at the time when the northern markets are demanding combless packages. This force of bees is shipped north and the beekeeper, by manipulating his hives, raises a second brood in time to collect the first cotton flow. This heavy production of bees by manipulation causes the queens to wear out very rapidly and annual requeening is very commonly practiced. The majority of the combless package sellers of Texas are residents of the black land district.

In conclusion, it must be said that the raising of honey, queens and combless packages, is a very highly specialized branch of the bee industry, within the cotton area, and that it requires a professional beekeeper, who has studied very minutely the problems mentioned above, to make a success of beekeeping in this area; but along the edges of this area, where the bees have an early flow from some other plant, the beekeepers produce a crop of honey with less effort than anywhere else in the State.

## BEE INCIDENT FROM MANCHESTER

The date of the visit of the Prince of Wales to Manchester coincided with the 25th birthday of the Manchester and District Beekeepers' Association—an association formed by a few in the district of Manchester, who had an interest in common—the study of the honeybee.

On the date mentioned a member was traveling through Manchester with a light wooden box containing combs and bees to the Corrington Farm, with the object of demonstrating queen rearing and breeding, but the procession and dense crowds held up all pedestrians. So, waiting to see the Prince, our member placed the box beside him on the pavement and gave all attention to the moving procession and delighted throng.

Fig. 4.—There are no exposed nectaries within the cotton flower.

His patriotic attention was, however, soon distracted by a sharp crack and a truly feminine squeal which escaped from a lady who had attempted to use the fragile box as a point of vantage from which to secure a good view of the scene.

The lady's leg had dropped among the bees, much to their annoyance and disgust. Their attention did not allow the victim to stay and apologize for the damage done to the box and contents, but she was last observed making a bee line for other parts in a cloud of dust.

The owner of the bees subdued his excited insects and treated the incident as a huge joke. Did the lady?—(R. A. C. in British Bee Journal).

## INTRODUCING QUEENS

By L. G. Windsor

When your new queen is received, go to the colony to which she is to be introduced, take a queen cage with you and find the queen, put her in the cage with a few bees. Take the cage in the house and leave it there 30 minutes, then take the queen out and kill, and turn the bees loose. Put your new queen and her escorts in this new cage, leave her there 30 minutes, then introduce by the cage method.

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# THE EDITORS' VIEWPOINTS

### Mixed Infection in Brood Diseases

A reprint from the Journal of Economic Entomology, in the shape of a bulletin, is on our desk. It is by Dr. Sturtevant, who works with Dr. Phillips at the Bureau of Entomology of Washington.

Dr. Sturtevant is undoubtedly correct when he says that "mixed or double infection is more probable than had previously been supposed." Double infection, in Europe as well as in this country, is responsible for many errors made in diagnosis as well as in treatment. Probably the error of Cheshire, in describing the symptoms of one of the brood diseases, while giving the proper treatment for the other, was due to double infection. The reprint in question mentions only 38 cases of double infection, recognized at headquarters, among 7,568 different samples, received from 1911 to 1920, and from 13 different States. Illinois is not among them; yet we recall several instances where the statement made by the Illinois beekeeper could be explained only by the existence of mixed infection of European and American foulbrood.

As Dr. Sturtevant says: "Since the requirements of the treatment of the two diseases are so entirely different, the necessity for correct diagnosis becomes important." Indeed the matter is of great importance, and it is so much more necessary that samples of diseased brood should be forwarded to headquarters at Washington, whenever the diagnosis is not positive.

### An International Congress

The second International Congress of Comparative Pathology is to meet in Rome, September 20, 1922, and among the 21 questions to be discussed, the diseases of the honeybees are listed, with our editor as the expected author of the opening address on this subject.

The questions to be brought to the attention of the scientists at this Congress embrace all sorts of diseases of man and animals, from cancer in human beings to cattle, poultry and silk worm diseases. It also includes bacteriology and parasites in the vegetable kingdom; manges, phylloxera, etc.

The announcements are forwarded by Dr. E. Perroncito, 40 Corso Valentino, Turin Italy, who is one of the active officials in charge of this Congress. Dr. Perroncito is a beekeeper of note in Italy.

### Sweet Clover and Lime in Illinois

"When the lime and sweet clover are properly used on such soil as the blow sand lands in Henderson County, the crop yield may easily be doubled," says Professor H. J. Snider, of the University of Illinois. His statement is of general interest because of the vast stretches of sand land in this State, particularly along the Mississippi, Illinois, Wabash and other rivers, and in other States as well.

In 1914 the University of Illinois began extensive experiments on a 20-acre tract of blow sand in Henderson County, to determine the fertility needs of this type of farm land. Results at the end of six years show that an application of four tons of limestone per acre is the first essential to reclaiming the land. Limestone, however, is no less essential than sweet clover, grown as a green manure crop.

"Alfalfa does exceedingly well on this land when once it is properly started," added Professor Snider. "On lime land the yields have been as high as 4½ tons of hay per acre."

The University found that rye does well on this type of land, also. In 1920, untreated land yielded 13 bushels of rye, while land which had received lime and sweet clover treatment yielded 29 bushels.

### Law Concerning Honey

The French Congress has followed the example of the United States, in its pure food law, by adopting a decree which forbids the use of the word "honey" for anything but pure bees' honey. That is right, "honey" is an attractive word and should be retained to denominate only the product of the bees gathered from the flowers. Otherwise, we would be permitting it to be "deflowered."

### Undesirable Publicity

There is entirely too much general publicity given to the subject of bee diseases in the newspapers. Owing to the fact that the public does not understand the nature of bee diseases or their treatment, the effect of much of this publicity is to create a prejudice against the use of honey. A clipping has recently reached the editor's desk which makes the statement that "a campaign is on to clean up the bee **diseases that contaminate honey.**" Such a statement can serve only to make the readers who are unfamiliar with honey afraid to buy it, for no one wants to eat contaminated honey. If all the facts could be clearly stated, so that it would be understood that honey is not in the least injured for human food by the presence of bee diseases, perhaps no harm would be done.

After reading a batch of several hundred such clippings, many of which contain absurd statements, one cannot but feel that much of the publicity concerning bee diseases is having a bad effect on the market by frightening the consumer.

The following is another sample, from the New York Tribune of July 24:

"The purposes of the census is to have on hand data to enable the agriculturists to stamp out a disease that contaminates honey and **is liable to be given to persons** addicted to the use of that product."

In this case the direct statement is made that the malady is likely to be contracted by persons using the honey. In most cases such statements do not appear, but the reader is likely to draw such an inference from the manner in which the information is given.

### A Correction

In our August issue, in the list of subscribers to the Dr. Miller Memorial Fund, we gave credit to Chas. F. Hoser for a contribution of $25. This should properly have been credited to the Montgomery County, Penna., Beekeepers' Association, of which Mr. Hoser is secretary.

### Beekeeping Tenth in Wisconsin

Beekeeping now ranks tenth in importance of agricultural industries in Wisconsin, according to the census. It is the opinion of Prof. H. F. Wilson, in charge of bee culture at the State University at Madison, that it will soon outrank some of the other pursuits and become fifth or sixth in importance.

### Bee Poison as a Medicine

Some of the magazines are ridiculing the idea of the poison of the bee being of any benefit in curing rheumatism. It has been tried and failed, they say. True, in many instances. But rheumatism may be caused by a number of different conditions. Is it not possible that, although some cases of rheumatism are entirely refractory to such treatment, others are conquered by it? Too many cases have been quoted of successful treatment to permit the absolute condemnation of this remedy. Read the article on page 358 concerning the sting cure.

### NORTH AND SOUTH AT MEETINGS

On August 14, the editor started for the Wisconsin bee chautauqua, which was to be held at Chippewa Falls during that week. His trip was by the way of St. Paul. At the arrival in that city on Monday morning, he found Professor Francis Jager with Mr. P. J. Doll awaiting him at the station, and he was entertained in the way which makes Father Jager so popular among our beekeepers. A visit at the apiary grounds of the State University was followed with a banquet where ten beekeepers were present, including the writer. Then an auto trip was made to the apiary of Professor Jager, situated beyond Lake Minnetonka. There we had the pleasure of seeing colonies of imported Carniolan bees. One of these was opened without any smoke whatever, frames lifted, the bees shaken off, without a single bee showing anger. Those pure Carniolans are certainly peaceable. Were it not for the difficulty of keeping them pure and the almost impossibility of ascertaining a small amount of mixture of other races, they would certainly be desirable, for their gentleness at least. The Italians may equal them, but do not excel them in this.

The field meet, at Chippewa Falls, was unsurpassed for the location of it, at any meeting anywhere. It was held in an open auditorium in the park adjoining the city, which is located in a very picturesque situation.

A lengthy discussion was held concerning the Wisconsin laws on honey and the grading of honey. Mr. C. D. Adams, of the Wisconsin Division of Markets, brought attention to the fact that much apparently ripe honey weighs under 12 pounds to the gallon, varying from 11 pounds 12 ounces to 11 pounds 14 ounces. If this is correct, it might be necessary to lower the legal minimum weight to a trifle less than 12 pounds. Some honey may be in perfectly good condition and keep well at a little less than 12 pounds to the gallon. Many people judge of the density of honey by its greater or less fluidity when a glass jar of it is inverted. But attention was called to the fact that in hot weather, the density is apparently much lowered and the honey appears thinner.

A. C. F. Bartz, one of the remaining beekeepers of the "old guard," gave an interesting talk on the industry in general, calling attention to the fact that no other industry of farming can boast of producing two crops on one plant; on clover or alfalfa hay and honey; honey and fruit on peach trees or apple trees, at the same time, making beekeeping a desirable industry.

A beekeeper showed a steam uncapping knife of his own invention, in which the steam returned to the kettle instead of condensing and its water mixing with the extracted honey.

The annual or "Hubam" sweet clover was much praised by Mr. E. R. Root, who had just visited some of the most extensive producers of this clover. It is said to produce stems and bloom very quickly, growing sometimes at the rate of a foot per week, reaching in 3 months a growth which is not attained by the biennial in less than 21 months. This clover may be distinguished from the biennial, while it is growing, by the fact that the biennial shows where the stem of the previous year has died back during the winter, while the annual has a perfectly straight stem. So any beekeeper may be able to distinguish one from the other by this sign.

Dr. E. F. Phillips, of Washington, gave a very interesting talk on the causes of honey yield, giving cool nights and warm days as the ideal weather for honey. He also stated that "the slower the yield of honey in a plant, the darker the comparative color of its honey, because of the greater amount of gum contained in slowly-produced flows of nectar."

The C. C. Miller Memorial Fund received a boost at the Wisconsin meeting. We had just received information of a $100 subscription to that fund by the beekeepers of one of our smallest States, Connecticut, at the Storrs meeting, under the urging of Allen Latham and Dr. Phillips. Dr. Phillips also spoke at the Wisconsin meeting, with much warmth, concerning the debt that the average beekeeper owes to Dr. Miller, the world over, since few, if any, of us can say that they did not learn anything from him. In far away countries they are subscribing to this fund, which should reach a sufficient sum to return at least $100 in a perpetual income for a Beekeeping Scholarship or Beekeepers' Library, somewhere in his native country, the United States. It is evidently going to come, for the beekeepers are awakening.

From Chippewa Falls, on the 18th, the editor went to Carbondale Ill., a jump of 7 degrees of latitude, or over 600 miles from north to south. Needless to say that the same clothes were unsuitable, for while it was cool and pleasant in northern Wisconsin, it was hot in southern Illinois.

The meeting at Carbondale, gotten up by some enthusiastic members of the Southern Illinois Beekeepers Association, was well attended, but mainly by beginners. We must commend the efforts of Messrs. F. M. Caldwell and J. R. Wooldridge, the President and Secretary of that association, for their effective work. If each association of beekeepers had such live officers, there would be much more interest taken in beekeeping and methods of honey selling.

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**Michigan Work**

The practice of publishing an occasional "Beekeepers 'Letter," followed by the Extension Division at East Lansing, begun by B. F. Kindig, is still kept up. The last letter was sent out by R. H. Kelty, the Secretary of the State Association. It contains valuable information. Similar letters should be published by different States, for the bee magazines cannot enter into details for each State, in the way that may be followed by the State officials.

In addition to the last "Letter," volume 3, No. 8, Mr. Kelty has published a Bulletin of 16 pages, No. 107, on "Diseases of Bees in Michigan." It is replete with needed information, for those who have not read the official bulletins from Washington, or the late ditions of our text books.

Every year, something new is learned, and the only way to keep informed is to read up.

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**Death of F. W. L. Sladen**

It is with deep regret that we announce the death, by drowning, of this gentleman, on September 10. It was at Duck Island, which we understand is in Lake Huron, where he was conducting some special research work in beekeeping. Mr. Sladen was Dominion Apiarist. We will give further mention of his work.

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**Food Waste in Feeding**

Professor Wilson, of Wisconsin, found that for every 30 pounds of syrup fed to the bees in the fall, less than 18 pounds was stored by the bees. The balance went into broodrearing and wax producing. We know that in other seasons still more is consumed for those two purposes. Huber, when he fed his bees, in Switzerland, said that the loss was so great that it did not pay to feed at one time more than they could consume each day. This was not practical. But Huber was a scientist, a student, an experimenter, and not a practical honey producer.

**Honey From Shoestring Vine**

C. H. Wiley, of Harrisburg, Ill., reports a large amount of honey gathered from this plant, also called bluevine (**Gonolobus laevis**). He reports two kinds, one with a white blossom, the other with a bluish blossom. It is a very noxious weed, which weighs down the corn stalks and cannot be easily eradicated. It is fully described by Pellett in "American Honey Plants."

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**Large Hives;**
**Large Broodchambers**

The large hive question looms up everywhere. Professor Jager, of the Minnesota State Agricultural Farm, affirms that within 15 years the shallow frame will have lost its popularity and become obsolete. But the standard Langstroth frame is too well established, in our opinion, to take a back seat so soon, if ever it does.

**The Mystery of the Bees**

"Le Mystere des Abeilles:" Here is a work very similar to that of Maeterlink "The Life of the Bee," by another writer in the French language, Eugene Evrard. As poetical as Maeterlink's book, this work has the advantage of being also practical and almost strictly correct in its descriptions. It is worth reading, and we recommend it to those of our friends who are masters of the French language. The descriptions of the "twenty different voices of the bees, which describe their desires or their lust, their hopes or their troubles, their wisdom or their ardor" are worthy of the pen of Huber.

# BEEKEEPING IN NEW YORK

## Impressions of the Empire State After a Journey of Hundreds of Miles Through Its Principal Beekeeping Territory—By Frank C. Pellett

Big apiaries are the rule in the buckwheat region. R. V. Cox has 460 colonies in this yard.

IT is probably safe to say that New York has more commercial honey producers than any equal area on the American continent. The census shows that several States contain more bees within their borders, but New York has more beekeepers who number their colonies by hundreds.

There are some important advantages enjoyed by the beekeepers in this region, the greatest of which is the world's best market. Within a small area of a few hundred square miles, is concentrated a population greater than is to be found in several whole States in the Mississippi Valley or the Far West. The western beekeeper finds that the price of his product is likely to be fixed by the price at which honey is selling in New York. From his receipts he must deduct a high freight rate sufficient to carry his crop to the eastern market. The New Yorker sells at his door and pockets that much additional change. Again, there are few places within our borders where it is possible to keep as many bees in one yard as in the buckwheat region of New York. Our cover page shows the Alexander apiary, at Delanson, which has long been famous because as high as 700 colonies have been kept in the one location. The writer has often heard the opinion expressed that beekeepers in this region would secure much larger crops with smaller yards. However, those who have kept bees in the buckwheat region for many years have not found this to be the case. R. V. Cox, of Sloansville, has 460 colonies in one yard. Mr. Cox tried dividing his bees into smaller yards, but found that he did not secure more than 10 per cent more honey than when he kept them all in one place. This small increase in production was not sufficient to pay the increased cost of operation, so he has since kept them in one yard.

E W. Alexander wrote in 1906 that he considered a place which would furnish a harvest for 35 days sufficient for a colony of Italian bees to store 100 pounds of surplus honey, a good location. He wrote also that he knew that his location furnished just as large crops per colony with 750 colonies in the one yard as it ever did with a less number. However, Alexander fed freely in early spring to insure brood rearing sufficient to build up his colonies. Buckwheat was and is now the principal source of surplus in this region. To support such large apiaries a location must not only have an abundance of plants which furnish the surplus yields, but there must also be a great variety of sources of nectar and pollen to support the bees during the remainder of the season. There are many places which would support large apiaries during the principal flows, lacking in natural pollen for much of the season before and after this flow. In such locations only as many colonies can be kept as can find support during the rest of the time.

Buckwheat yields best with cool nights, followed by bright days, with little wind. It requires a humid climate and is not important as a source of nectar in regions where the atmosphere is dry. It is possible, however, that altitude and temperature may be the important factors, since it is reported as yielding in northern Nebraska, where the altitude is above 1,800 feet, even though the air is dry.

### Other Sources of Honey

The buckwheat region of New York is more widely known than other sections because the large apiaries give it a peculiar distinction. However, only a comparatively small portion of New York is in this region. White and alsike clover probably furnish the greater part of the surplus honey going to market from this State. The

Purple Loosestrife grows higher than a man's head in the wet lands along the Hudson River.

past season a number of beekeepers reported surplus honey from alfalfa. Generally speaking, alfalfa seldom yields nectar to any extent east of the Missouri River. It probably is not often important to the New York honey producer.

Basswood is still important in a few places, although the cutting of the trees is rapidly removing basswood from this section, as elsewhere. The large orchards provide immense areas of fruit bloom and a few beekeepers are sufficiently expert to get their bees through the winter strong enough to store surplus from fruit bloom when the weather is favorable. Forage from the fruit trees is sufficiently plentiful to provide an abundance of honey, but there is nothing the beekeeper can do to make the sun shine during the fitful weather of early spring. Too often there will be only a few bright days in which the bees can make the most of the available supply. In most cases fruit bloom and dandelion are utilized to build up the colonies for later flows.

Sweet clover is becoming of more importance in the east every year and, while it apparently does not yield as heavily as in the west, it is valuable wherever grown.

Goldenrod and asters follow the buckwheat flow and furnish ideal conditions for late brood-rearing in preparation for winter. At times, however, the quality of this late honey is such that the beekeepers find it advantageous to feed some sugar syrup for winter stores.

Left to right, A. E. Lundie, Otto Hupfel and G. H. Rea.

### Some Special Sources

There are many plants important in limited areas of New York which are little known outside that State. Among these may be mentioned wild thyme, which was mentioned in several numbers of this Journal this year. J. B. Merwin, at Prattville, lives in a region where thyme is the principal source of surplus. In 25 years he has never had an entire failure from thyme, and he has had as high as 125 pounds of surplus per colony from this source. Thyme is mostly confined to Delaware and surrounding counties.

Purple loosestrife is another plant not often found outside of New York. It is a vigorous plant, reaching a height of 6 feet or more, and grows only in wet places not suited for agricultural purposes. It is common up and down the Hudson River and the backwaters and inlets of that stream. It is also common in parts of the Mohawk Valley and westward across the State. It blooms in midsummer and the honey is dark and of inferior quality. It is commonly known as rebelweed.

In the northern part of the State, in the Adirondack region, there are some fireweed locations. On Long Island, Clethra is found in abundance.

Prof. and Mrs. Rea, and their Ithaca home.

### The Conventions

New York has numerous organizations of beekeepers and the writer greatly enjoyed attending about a dozen of these meetings. Entirely too much space would be required to give a detailed account of them. The attendance was surprisingly good, considering the number held. Even the local meetings which happened to fall on rainy days had some lively discussions and good turnouts. The writer made the round with George H. Rea, the beekeeping specialist for the college at Ithaca. Rea is a real beekeeper who has had years of practical experience in the apiary as well as years of experience in inspection work in Pennsylvania.

If one is to judge from the number ot complimentary things the writer heard said of Rea behind his back and the few criticisms that were spoken, his services are appreciated by the rank and file of the big honey producers of his State. A picture of Mr. and Mrs. Rea, at their home in Ithaca, is shown herewith.

After the first meeting we were joined by A. E. Lundie, whose home is in far South Africa. Mr. Lundie is making an investigation of beekeeping conditions in this country for his government, and will be in this country for several months. He is a splendid traveling companion and we were especially happy in his company. How little conditions in South Africa are understood in this country is best illustrated by the fact that many people apparently expected to see a black man when Mr. Lundie appeared. His picture is shown, together with G. H. Rea and Otto Hupfel. Mr. Hupfel is a New York business man who has a delightful farm home, not far from the Hudson, and who is an enthusiastic beekeeper.

### Local Selling

To a man from the west the number of roadside markets is a constant surprise. New York has some wonderful roads, and farmers living beside them establish markets of their own for the purpose of selling to tour-beside them establish markets of their roadside markets, where corn, tomatoes, fruit and other seasonable farm products were sold. Many city people driving through are very glad of a chance to buy fresh produce direct from the farm. Thousands of pounds of honey are disposed of in this way. Many western farmers will do well to give this roadside selling a trial. Adams and Myers, of Ransomville, N. Y., who are big fruit growers as well as beekeepers, stated to the writer that on one occasion they sold more than $500 worth of fruit and honey at the farm in one day.

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## UNEDITED LETTERS OF HUBER

### Introduction

(Continued from September)

(Translated from the French by C. P. Dadant).

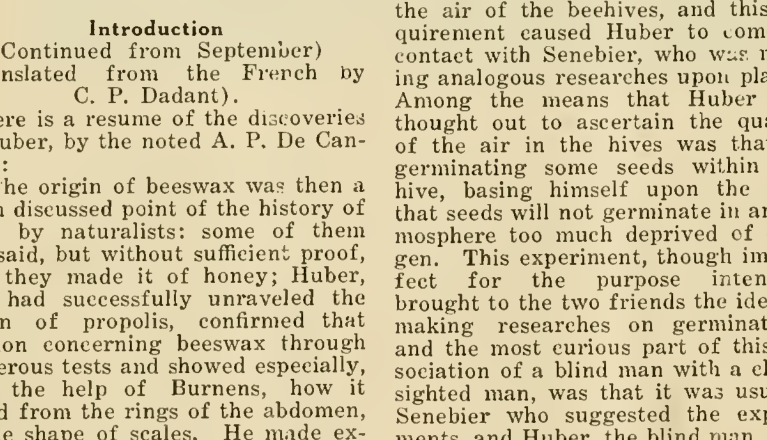
Here is a resume of the discoveries of Huber, by the noted A. P. De Candolle:

"The origin of beeswax was then a much discussed point of the history of bees, by naturalists: some of them had said, but without sufficient proof, that they made it of honey; Huber, who had successfully unraveled the origin of propolis, confirmed that opinion concerning beeswax through numerous tests and showed especially, with the help of Burnens, how it oozed from the rings of the abdomen, in the shape of scales. He made extensive experiments to ascertain how the bees prepare it for their combs. He followed, step by step, all the constructions of those marvelous hives in which the bees seem to solve the most subtle problems of geometry; he assigned the role which each class of bees plays in this work, and followed their labor from the rudiment of the first cells to the complete perfecting of the combs. He made known the ravages caused by the sphinx atropos (death's head moth) in the hives which it enters; he even tried to unravel the history of the senses of bees, and particularly to seek the seat of the sense of smell, the existence of which is demonstrated upon the entire natural history of insects, while their structure has not yet permitted to locate it with certainty. Lastly, he made interesting experiments on the breathing of bees; he proved by several experiments that those insects need oxygen just as do other animals. But how can air be renewed and retain its purity in a hive closed everywhere, except at a small entrance, with a sort of putty? This problem required all the sagacity of our observer, and he came to recognize that the bees, by a peculiar motion of their wings, set the air in motion so as to secure its renewal; after having taken note of this, he even proved his statement by imitating this ventilation through artificial means.

These experiments on the breathing of bees required some analyses of the air of the beehives, and this requirement caused Huber to come in contact with Senebier, who was making analogous researches upon plants. Among the means that Huber had thought out to ascertain the quality of the air in the hives was that of germinating some seeds within the hive, basing himself upon the idea that seeds will not germinate in an atmosphere too much deprived of oxygen. This experiment, though imperfect for the purpose intended, brought to the two friends the idea of making researches on germination; and the most curious part of this association of a blind man with a clear-sighted man, was that it was usually Senebier who suggested the experiments, and Huber, the blind man, who executed them.

II.

This is what was known, up to that time, of the works of Huber. He died September 22, 1831, and his life, after 1814, was unknown. It was, however, not admissible that he should have stopped making observations, after taking so much interest in the subject for 25 years. Moreover, the end of the preface of the second volume of his 1814 edition indicated exactly the opposite.



New York farmer's roadside market.

"I might," said he (New Observations, Vol. 2, page 6) "add several observations to those which I now give to the public; but they do not present a sufficiently connected aggregate, and I prefer to wait till they may be accompanied with facts upon which they have a bearing."

A lucky concourse of circumstances permits me today to partly make good this shortage.

In 1890, during a visit of apiaries which I made in Savoy, in company with Messrs. De Layens and Cowan, I learned from M. E. Mermey, of Aix-Les-Bains, a young beekeeper who had followed my course of lessons at Nyon, that the father of a neighbor beekeeper, M. Ch. De Loche, possessed among his family papers a number of unedited letters from Francis Huber, addressed to his grandfather, Count Mouxy De Loche. We hastened to visit the Castle of Loche to solicit the permission of reading those letters. The Count was momentarily absent, but we were given the best welcome by his sons, who promised to transmit our request to their father. The latter had the kindness to visit us that same evening at Aix and did me the great favor of entrusting those letters to me with the permission to publish them.

His grandfather, Francis de Mouchy, Count De Loche, born at Gresy-Sur-Aix, in 1756 and deceased in 1837, was an observer and a savant of merit. After having served in the army of the House of Savoy and reached the position of Major General, he had withdrawn to Turin, later to Loche, to devote himself more completely to his taste for natural history and archeological researches. He published a great number of works on natural history, archeology, history, agriculture, etc.

But my good fortune did not end there. When I published, in 1894, a new edition of the remarkable memorandum of A. P. De Candolle upon the author of the "New Observations," I sent a complimentary copy of it to Mr. Georges de Molin, engineer at Lausanne, grandson of Francis Huber. This kind old man hastened to inform me that he was just then busy sorting papers which had been forwarded to his mother by the heirs of his uncle, Pierre Huber, after the death of the latter, and that there were among them quite a number of letters from his grandfather, nearly all relative to bees. Although he believed that his uncle had taken from these letters and perhaps inserted in the "Annals of the Society of Physics" of Geneva anything which might interest scientists, he offered them to me in case I should desire to inspect them. Looking through the above mentioned "Annals," we found no trace of these letters whatever.

In the file of letters which were kindly loaned to me by Mr. De Molin, I found a certain number of first drafts of letters addressed to Miss Eliza De Portes, at Bois d'Ely, near Crassier. Having obtained information from a friend of the family, I learned that the young lady correspondent of Huber had become Mrs. De Watteville, and that she was residing at Berne.

This venerable lady, now more than octogenarian, was kind enough to loan me the entire collection of those letters, found in a volume of manuscript, and sent with the parcel the following words, which I take the liberty of publishing:

"My niece, who is returning to Bois d'Ely, is kind enough to bring to you the letters of my friend and venerated master, Mr. Huber, of which I have copied a great number in order to make them more easy to read. You may keep them as long as you desire, and may use them freely for your magazine. I will be happy if they can inspire a taste for natural history, together with a simple and fervent piety."

In all those letters, the striking fact is the religious sentiment of Huber, his conscientious spirit, his constant desire of giving credit to his predecessors and his skill in directing and understanding the experiments of his helpers. "I am more certain than you are of what I am telling you," said he to De Candolle, "for you publish that which your own eyes alone have seen, while I take the average of several testimonials."

It would be difficult to show greater philosophy and greater resignation to one's infirmity.

We may admire, also, the correction and clearness of his style, especially in the "New Observations," for we must not forget that he was an octogenarian when he wrote to Miss De Portes, and that his dictation was through two inferior clerks at least: the one to whom he dictated the letters and the one who copied them for the bound manuscript.

One was astonished at all that Huber had discovered; one will be much more so after reading these letters, in which new views and the very best practical suggestions abound. After him, little has been discovered outside of parthenogenesis; his observations were so precise and so positive that all the modern works, however considerable, have only proven a following of his and a confirmation of his, without amending them. For this reason, I believe that the publication of his unedited correspondence will be welcomed with lively interest by beekeepers in all countries, and I here republish the expression of my hearty thanks to Mrs. De Watteville, the Count De Loche, Mr. De Molin, and Mr. Edmond Pictet for their kindness in entrusting to my care, for publication, the unedited writings of the great observer of the bees.

Edouard Bertrand (1897).

(To be Continued.

(In our next issue will appear the first of the letters written by Huber to Miss Eliza De Portes. These letters give a fascinating account of the observations of the great naturalist).

## DO BEES HEAR?

By E. M. Barteau

So far as I am aware, the only affirmative evidence that bees hear is based on the fact of the "piping" and "quahking" of the emerged and unemerged virgins, respectively.

If it could definitely be proven that these pipings, etc., were challenges and answers, it would be further corroborative proof that bees actually hear.

Isn't it a fair asumption that these cries of the young queens are their even'song, like the note of the whip-poorwill and the peeping of frogs at dusk?

Don't we assume the "challenge and answer" of the queens, because of their known antagonism?

Mr. Holterman (page 179, May) says: "I have had no doubt that a pan, or any other noise that would drown the sound of the queen flying, would bring the bees down."

Isn't it a little more likely that the bees are cognizant of the queen's presence by her odor?

We all know how fond the bees are of the hand that has just held a queen, and how quickly they locate a cage that has lately contained a queen, if only for a few minutes.

Isn't it probable that a swarm, when traveling, maintains its elliptical mode of flight in order that the bees be continually brought to the leeward of the queen and thus be sure of her presence—more likely by scent than by sound?

The queenless swarm does not usually cluster; if it does, it soon breaks and returns. Can it discover its queenless condition, when clustered, by the noise of the queen's flight?

Let's attribute it to odor until a more satisfactory answer is given.

As stated above, the queenless swarm usually returns to its hive without clustering.

If you, my dear Mr. Holterman, can succeed in "dishpanning" a queen-right swarm into returning to its hive, we will surely take our hats off to you.

New York.

(On this subject it may be interesting to read the explanations Huber gave, about a hundred years ago, concerning the piping and quahking of the queens. He wrote of a young queen about to hatch:

"We could discern that the silk of the cocoon was cut circularly, a line and a half from the extremity; but the bees being unwilling that she should quit her cell, had soldered the covering to it with some particles of wax. What seemed most singular was, this female emitting a very distinct sound or clacking, from her prison, which became still more audible in the evening, and even consisted of several monotonous notes in rapid succession."

A little farther along he wrote:

"The first queen-cell opened on the 9th. Its young queen was lively, slender and of brown color. . . . . When she approached the other royal cells, the bees on guard pulled, bit her and chased her away; their irritation seemed to be greatly excited against her, and she enjoyed tranquillity only when at a considerable distance from those cells. This proceeding was frequently repeated through the day. She twice emitted the sound; standing, while doing so, with her thorax against a comb, and her wings crossed on her back, in motion, but without being unfolded or farther opened. Whatever might be the cause of her assuming this attitude, the bees were affected by it; all hung down their heads and remained motionless. . . . .

"The queen confined in the second cell, which she had not yet left, was heard to pipe several times. . . ."

Surely this piping and quahking is a mode of expressing their anger or restlessness. We hear it often in cages of queens that are being forwarded by mail. Whether the bees have organs of hearing, or not, this indicates that they are more or less affected by the noise produced by angry queens.—Editor.)

## DEEP BROOD CHAMBERS

As the end of the season approaches and consideration of wintering requirements intrude upon us, there arises a realization of the rather incompatible conditions which the beekeeper (and the bees) have to face.

Every intelligent beekeeper appreciates the benefits (aye, the necessity) of having a host of young bees as late in the fall as possible, if spring dwindling is to be avoided; and on the other, a sufficiency of winter stores is indispensable. If the combs are occupied with brood at this time, as is desirable, what about space for ample winter stores? The shallow super of honey which is often advised to be left on top cannot serve the purpose as effectively as a store of honey in the brood chamber, more in accord with Nature's methods.

Here is one of the strongest arguments for a deeper brood chamber. It is really regrettable that beekeeping is yet hampered by the legacy of comb-honey necessities and methods. A deeper brood chamber is mentioned as a means to secure greater capacity, as such a change may be realized with the least sacrifice of equipment and with the least trouble.

When compared with the broodnest as built by the bees when not limited by conditions, the ordinary beehive is woefully shallow. The movement of the bees' cluster in winter is pretty well understood, and it is only too well known that the bees often starve with stores near at hand, because they may be unable to move the cluster in a horizontal direction contrary to their natural instinct.

Therefore is it not better to advise the beginners to start out with the deeper brood chambers, and to urge the deepening of hives already used?

Old combs are continually being melted up; why not replace with the deeper frames, and add the proper depth to the hive body? It is an easy matter to add that depth.

D. Queen, New Jersey.

## LEGISLATION ON MOVABLE COMB HIVES

By Frank Van Haltern

I would like to take issue with Allen Latham, page 321, in his stand on the enactment of legislation compelling the keeping of bees on movable combs.

Mr. Latham cites cases to illustrate the lack of skill on the part of beekeepers, which is also ignorance and disinterestedness. Besides taking care of our apiaries I have done some inspection work in northeast Kansas and I have found conditions just as bad as he points—and worse. I have found hives with good frames, hives with parts of frames, hives with barrel staves for top bars, and hives with no frames at all. I have found square hives, deep hives, bees in kegs and barrels and—even in washing machines. I have found bees nailed up in boxes of 1¼ inch lumber with spikes, tops, bottoms and sides solid, and I have found bees in hives so rotten that they fell to pieces when I raised them to look underneath. I have found hives right side up, up side down, sideways, on top of each other—any old way.

Mr. Latham says: "Let the neighbors keep their box hives." From the standpoint of a selfish beekeeper, I say, let them keep them. I know how to fight disease—they don't. Disease will spread through their bees and theirs will die and they will get little honey, while I will look after mine and will get honey, and there will be no competition for my bee pasture.

But from the standpoint of the bee inspector, I say, I want a law that will stand behind me and back me up when I tell the beekeeper that he must keep his bees or disease is liable to wipe them out, and some of his neighbors at the same time. I want to give him a little compulsory education.

Mr. Latham is right when he says that it is only through education that we shall ever clean this country of bee diseases, and the movable comb hive (note that I do not say movable frame hive) is one of the greatest in the education of the beekeeper if the inspector uses his opportunity. Mr. Latham prefers educating the beekeeper to the movable comb instead of legislating him to it. But how can we make him take the education? In Kansas we compel parents to send their children to school until they are 16. Many now in school would grow up illiterate if it was not for that law. People shy at education as though it was a pestilence. I have talked until my throat was tired and then had the beekeeper wind up the intercourse with the remark, "Well, I guess I will just let 'em set. If I get some honey it don't cost nothing, and if I don't, I don't care."

There are thousands of beekeepers who are beekeepers only because a swarm came to them and this swarm swarmed and the best they did was to give them a box to go into. They are too busy with other work to take valuable time from it to learn about something in which they are not interested. When we undertake to educate all beekeepers to correct methods, we have, as a schoolboy would say, some job. About two-thirds of them will not come to bee meetings, they will not read bulletins sent to them free of cost, they will not, or cannot, take time to listen to the inspector and they would not treat their own diseased bees if treatment was not compulsory. I have often explained the advantages of straight combs and good hives, and as soon as the beekeeper found that there was no law compelling him to keep his bees better he lost interest, even though admitting that he ought to do something. But when he was told that he had ten days to treat his diseased bees or the law would be after him, he began to ask questions.

Mr. Latham says it would take longer to go through an apiary of box hives and reach as satisfactory a conclusion than it would to go through an apiary having perfect combs. For my part I have never been able to go through an apiary of box hives and reach anything like a satisfactory conclusion. Box hives cannot be inspected with any reasonable accuracy without tearing them to pieces, in which event, should there be American foulbrood in a hive, it is laid open to robbers. But should no disease be found you have an irate beekeeper to deal with.

In my opinion, a law making movable combs compulsory should not be passed in any State until that State has sufficient inspectors to reach every beekeeper. Then the inspector would locate crooked comb hives and give instructions for transferring, just as he does when he finds disease. Then the next year he could pronounce colonies free from disease with much more certainty than if he had to turn up boxes and dig out pieces of comb from beneath.

As an inspector, I do not care what kind of a hive the beekeeper uses. He can buy it or make it, any old way he likes. But I do care what kind of a comb he uses. I want the comb to be straight enough to be taken out without too much work, and I want it bounded by a frame that will hold it together. He may keep his bees any way he likes, just so he has his combs in such shape that I can look at all the brood without tearing his hive to pieces. But he will not do this for me unless I have behind me a movable comb law.

Kansas.

Wilmon Newell

## DR. NEWELL

We are pleased to be able to reproduce herewith a likeness of Dr. Wilmon Newell, of the Florida College of Agriculture. For years past his name has been frequently mentioned in these columns in connection with his official work or some research problem of interest to the beekeeper. A few months ago announcement was made of his appointment to the position of Dean of the College of Agriculture and Director of the Florida Experiment Station. In his present position Dr. Newell must consider the problems of all phases of agricultural activity common to his State. Knowing his lifelong interest in beekeeping, we feel that the industry will receive all the consideration which its importance justifies on the part of both the College and the Experiment Station.

## SHALL WE ENFORCE MOVABLE COMBS?

By Chas. F. Hoser

In August issue, Allen Latham severely criticises the recently passed Pennsylvania bee law prohibiting the keeping of bees in box hives after a certain date. There is much truth in his article, and while I cannot agree with him in all, in the main I do. It is true that most of us rebel against force. We can be led, educated, to do those things that no amount of driving will force us to do.

The box hive should be eliminated if only in the interests of better beekeeping, and no better means of accomplishing its elimination can be found than through our county or local beekeepers' organizations. Every member of a live County Association is on the lookout for bee diseases which may affect his own apiary, or be transmitted from a neighboring apiary, and is ready to do his or her share towards their eradication.

A greater menace than the box hive exists in the sale of honey (unsterilized) from an infected apiary. Proof of this is contained in the article by Elmer G. Carr in August Gleanings. He says: "When the honey barrels were emptied they were rolled upon the freight house platform with bungholes opened, the outside sticky with honey." As a consequence, during a dearth of nectar, the bees from his apiary, within a stone's throw of the freight house, helped themselves, and foulbrood appeared where previously none had existed. The apiary dwindled from forty colonies or more to fifteen, and no crop produced in three years, causing a large financial loss to Mr. Carr. But little stress has been laid upon the sale of infected honey, and yet such sales should be prohibited unless the honey is thoroughly sterilized. Report has it that foulbrood appeared in and around a large eastern city only after certain honey bottlers had carelessly exposed containers that had been used for infected honey. We know of a beekeeper in Pennsylvania who harvested and sold an immense crop of honey while at the same time fighting foulbrood in his apiaries. Was it right that this honey should be sold without being sterilized? I say no, and that prohibition of sales of such raw honey should be enforced.

Mr. Latham is right regarding movable frame hives. Too often they may become "immovable" movable frame hives, and then they are just as much a menace as box hives. Education is needed, but it should be the kind that will teach that not everyone can keep bees successfully and that it were better not to keep them at all than to keep them slovenly.

Pennsylvania.

(If the beekeepers should make a general effort to prohibit the sale of honey from apiaries in which disease is present it would very probably result in the ruination of the honey markets. Such efforts would result in general newspaper comments which would give the general impression that there was danger of the person eating the honey contracting some disease. The fact is that such statements are already beginning to appear frequently in print. The beekeepers cannot be too careful to make sure that the real facts concerning bee diseases get into print. Foulbrood is now so generally distributed that it would be impossible to limit the sale to those whose apiaries are entirely free from it.—F. C. P.)

## SUGGESTIONS FOR OBSERVATIONS

I am interested in "causes," i. e., why things happen. You have no doubt made observations on honey flows in your locality; can you tell me under what conditions the honey flow is extra good, average, and a failure? In what rotation do the extra good years come?

It would be interesting if you would ask beekeepers in the different States and countries to make accurate observations on honey flows before and during the flow, giving the range of the main surplus plants in their localities. For instance, the following table could be filled in daily:

Temperature—day, night.
Weather conditions — Sunshine, cloudy, etc., wind.
Barometer.
Hydrometer.
Soil—water, land.
Elevation.
Form of country, i. e., mountains, table land, etc.
Latitude, longitude.
Phase of moon during honey flow.
Surplus honey flowers.
Duration of flow.
How soon commencing after show of bloom.

Lilian E. Bland.
British Columbia.

(We refer this to our readers for replies.—Editor.)

## EDITOR OF THE BEE WORLD

Our readers will be interested in the photograph of A. Z. Abushady, shown on this page. Mr. Abushady is the editor of "The Bee World," published by the Apis Club of England.

A. Z. Abushady.

The Apis Club is an international institute for the study of apiculture and the official organ furnishes a good review of current beekeeping literature of the entire world. References to this publication have appeared frequently in these columns.

## QUEEN CAGE CANDY

By Jay Smith

It is an admitted fact that American foulbrood has been spread in candy that has been used to provision cages in which queens are sent through the mail. The law requires that a certificate of health be furnished or that the honey be boiled before being used in making queen candy. Boiled honey is about the poorest food for bees that can be imagined and will cause dysentery and death to the bees and queen if they are confined for any length of time. If a certificate of health is furnished with each shipment showing that no disease exists in the apiary from which the queen is sent, it does not prove that the honey was taken from that apiary. There is nothing to hinder one from using diseased honey and furnishing a health certificate at the same time. I do not mean to infer that anyone would do that intentionally, but there is a possibility that diseased honey might be used accidentally. To overcome the objections named above, it has been recommended that we must invert sugar instead of honey in making queen candy. This has been tried by many beekeepers, the invert sugar being purchased from manufacturers of that commodity. It answered the purpose very well as long as the shipment was made to a point not far distant, but if the distance were great and if the weather were hot and dry, the candy made with invert sugar would dry out and become hard and the bees would die. Now the chemists maintain that honey and invert sugar are exactly the same, with the exception of the flavor, and this had no bearing on the matter of the candy drying out. But queen breeders proved that candy made with invert sugar did dry out, while that made with honey did not. I was satisfied beyond doubt that the chemist knew what he was about, and I thought I knew what I was about when I proved that the invert sugar candy dried out. The past season I have been investigating and experimenting to find, if possible, where the discrepancy lay. A little simple experiment made it all plain, so that any one can make his own invert sugar and in the regular way make queen cage candy that will not get hard. This candy is in every respect equal to the best article made with honey and in fact it is superior. Several tests were made by provisioning queen cages with the home-made invert sugar and honey and the honey candy became hard before the candy that was made from invert sugar did. For these tests the cages were placed in the attic during our driest weather, when the thermometer was running above 100 degrees every day outdoors, while up in the attic it was as hot as—well, you can imagine what.

In making the investigations, I first tested the boiling point of honey, and invert sugar made by manufacturers. It is known that water boils at a temperature of 212 degrees. As sugar is added and the syrup becomes heavier, the boiling point is higher. I found that honey boils at a temperature of 245 degrees, while the commercial invert sugar boils at a temperature of 235 degrees. This made it plain that the reason that candy made with invert sugar dried out sooner than that made with honey was the fact that invert sugar contained more water and as soon as the water dried out the candy became hard. Some home-made invert sugar was then made by using granulated sugar and tartaric acid, and this was boiled until a temperature of 250 degrees was reached, 5 degrees above the boiling point of honey. This has proved superior to honey from the fact that it is heavier and will not dry out, no matter how hot and dry the weather is. It is a simple matter to make this invert sugar, and anyone can easily make it. A thermometer that will register up to 250 degrees is necessary. To make this invert sugar proceed as follows: To one-half pound of boiling water add one pound of granulated sugar and ten grains of tartaric acid. Allow this to boil slowly, without stirring, till a temperature of 250 degrees is reached. If you have no druggist scales to weigh the tartaric acid, use a scant one-fourth teaspoonful. A little more or less will not matter, as the acid is not harmful to the bees. I have found that an empty 22 short cartridge holds 2½ grains, so four of these measures will be about right for a pound of sugar. To make the candy proceed the same as in making honey candy. This home-made invert sugar is heavy and thick and will have to be warmed in order to work into candy. Do not warm to a temperature higher than 125 degrees. Put two or three pounds of pulverized sugar on the table and pour onto it some of the warmed invert sugar and knead it into a thick, heavy candy. There is no danger of making it too stiff. If it is inclined to be sticky the next day, work in some more powdered sugar. This is easy to make and will be found even superior to honey candy in every respect.

## APIARIAN FLORA

By R. Claustre

Malope. Malope is a kind of mallow, annual and very melliferous, blooming in May, June, July, and in October and November. It seems to grow in all sorts of soils, even really bad. From the same spot at the top of the soil, from 2 to 5 stems grow, which may reach 80 to 150 cm., according to the terrain. Each of those stems bears, every ten centimeters, a ramification of different lengths. At the axils of the branches are clusters of some ten flowers, which bloom one after the other. On each stem, about five centimeters apart, at the axil of the leaves, is also a small cluster of flowers. These flowers are about of the size of those of the creeping mallow, but with brighter colors. Malope may be sowed advantageously to cover the foot of a wall, the leaves being as large as the flat part of a plate. They are of fine green color with the general appearance of those of the creeping mallow, but more rugose and as if varnished. These leaves wilt and fall when blooming begins. The blooming lasts fully a month, and the pollen is of ash-gray color. This blossom is less visited by the bees when the phacelia blooms.

The fruit of the malope resembles a crown, which divides into several segments, containing as many seeds; therefore easy to gather. The seed may be sowed in the bushes along roads. The roots are much less tenacious than those of the common mallow; it is therefore not difficult to eradicate it out of the garden in case of dissatisfaction.

As it is inadvisable to introduce a parasite into your land, be sure to examine the seeds before planting them; a small weevil preys upon them. Plant the seeds under a little soil and 20 to 30 centimeters apart. They may be reset easily.

While phacelia taken from its habitat has not undergone any change, malope sowed at Aix (Ariege, France) reduced the diameter of its flowers and almost doubled the surface of its leaves.—Gazette apicole.

## CLEANING SECTIONS

By J. E. Crane

I am cleaning section honey these days. It might seem rather monotonous work to be shut up in a close, hot room and work hour after hour over the sticky sections of honey, but I do not find it so. In fact, I find it quite interesting work, more fascinating even than a new book, for these supers, as they come from the various hives, give me a chance to study the individual characteristics of different colonies of bees. Indeed these supers read like an open book.

It is as though the farmers of the town had brought their products together and I was to look them over and be the judge.

The first super I open I may find that the colony from which it was taken had gnawed away the edges of the foundation in the sections and used it for building the comb, leaving it without any attachment at the sides or bottom, and very light.

The next may have brought up dark bits of wax from the brood-chamber and greatly injured the looks of the comb. Another may be well filled and white, but the bees that filled it seemed to have little sense of the fitness of things and have stored more or less pollen in these sections. While the great majority of sections may be well filled and look very well, we may find now and then such as we have mentioned.

Occasionally we find a super with sections having more or less drone brood, but we are not disposed to find much fault with such, for we have shut off the drone comb from the brood chambers as much as possible. Some colonies seem to use a much larger amount of wax in building their combs than others, for they not only look waxy, but if you cut into them you will find them tough and unsatisfactory. Again we may find supers from hives where the bees have a propensity for gathering propolis rather than honey, and we find every crack and cranny filled with this undesirable material. Not only will the cracks be filled, but the inside of the section too is coated with it, and sometimes even half finished comb gets a coating. So firmly will the sections be glued to the super that it is exceedingly difficult to loosen them without breaking them. Indeed I have broken several this season in trying to take them from the super.

There is undoubtedly a great difference in the amount of propolis that bees gather in different sections of the country, but I believe there is a still greater difference in colonies in the same yard. We find that while one colony is filling its supers with the finest sections of honey, another by its side is storing little but this undesirable propolis.

It is but human that we should desire to destroy the queens from such propolis-gathering colonies and requeen from colonies that have filled the sections given them with white combs, well attached at the sides and with so little propolis that they look, when filled, as white and clean as when first set up.

Beekeeping is said to be the poetry of rural life, and I am sure one of our greatest joys in beekeeping is in our ability to change an undesirable colony, whose work does not suit us, into one with more desirable qualities; to destroy the unprofitable servants and replace with those that have proved profitable, for we have the power of life and death in our hands, over our industrious subjects. And as I sit and clean one section and super after another I wonder if, after all, I am so much better than the Pharaohs and Neros of ancient days, who exalted one subject and beheaded another as they willed. As I muse over the strange world in which we live, a mud wasp dressed in its brightest color alights on my table. I offer it a sip of honey from the point of my knife. It takes it with a relish. I did not know before that they liked honey. Does it feed its young with honey and pollen? Not at all, for it builds its cells of mud, and as one is completed it lays a small, pearly egg at the bottom and then fills the cell with spiders, after it has stung the spiders so as to paralyze them but not kill them. Then, when the egg hatches it feeds on those spiders—yes, eats them up alive. Hard on the spiders, you say. Yes, but those same spiders have lived on other live things all their lives. It is tit for tat. "Those who live by the sword shall perish by the sword." Why does that mother wasp gather spiders and only spiders for her young? How does she know that stinging them will not unfit them for food for her young? Not one mother wasp in a thousand generations has seen one of her offspring. Surely this is a world where we prey on one another.

"The falcon preys upon the finch,
  The finch upon the fly;
And that a rose may breathe its
    breath,
  Something must die."

As I sit cleaning sections, I have time to think and do not find it monotonous.

## INTRODUCING QUEENS

By E. M. Barteau

Upon receipt of a queen through the mails, open the hive and remove queen to be replaced. Next remove the new queen from mailing cage, letting her out inside a wire veil; if you haven't one, let her escape onto a window pane, where she can easily be caught and clipped. This done, put her in a Miller cage without attendants. Now take her to the hive and place cage lengthwise and resting on top of two frames, that is, so the space between the frames is directly beneath the cage. If the hive has an inner cover, put it on deep side down; or a queen excluder, or Hodgson escape-board can be used; any arrangement which leaves a bee-space over top of cage, allowing the bees free access to it.

If supers are on the hive, use two excluders, putting the first one on deep side down, the second one on top of this, deep side up, to prevent the crushing of bees on bottom of super frames. This will allow the bees access to the supers.

Twenty-four hours later, examine to see if bees have removed card from over candy; if not, remove, close hive and do not open again for five days.

If a long time queenless, or if robbing has been going on, wait forty-eight hours before removing card. If convenient, I rub the body of the dead queen on cage. While it isn't essential, theoretically, at least, it seems as though it might, in a degree, allay the first antagonism of the bees towards the new queen.

So far this season I have introduced forty-seven queens without loss, and in one instance the colony was being kept on edge by robbers.

The method is very simple and easy. No shaking or brushing of bees, no removing or spreading of frames, and I believe as safe and efficient as any method yet devised.

(The above method is almost identical with that recommended in paragraph 536 of "The Hive and Honey Bee," and is probably the safest that may be devised, barring the introduction of queens to combs of hatching bees. Leaving the hive alone for several days after introduction is important, as it avoids the excitement often caused by robbers.—Editor.)

## SMALL OR LARGE CHAMBERS FOR A HIVE

By C. E. Fowler

Most beekeepers realize that a large super is too large for the bees to enter readily unless there is a heavy flow on.

Some beekeepers hate the small super because the frames are not interchangeable with their large brood-chambers.

Others using the Jumbo style of hive just can't use their brood-chambers for supers, so they try to be contented with two size frames.

Then there is a large number of beekeepers who are either women, or who have women helpers, to whom a large chamber is a very great inconvenience.

Most beekeepers already have large chambers, and not knowing what to do with them and not knowing anything about the advantages of the small chamber, not only keep on using large hives, but keep on talking large hives.

When I first kept bees I scrapped everything but the 10-frame Langstroth. One day I lifted a super of honey off of a hive about 4 feet high, weighing 90 pounds, boiling over with as lively bees as anyone could wish for.

As I was trying to get a perfect system of beekeeping, I immediately adopted the 10-frame 5 11-16 chamber for everything, and have scrapped everything else since.

Now, the advantages of the shallow chamber will pay me on each hive each year enough cash money to pay for a 10-frame Langstroth hive and the time saved will pay for another one that I have scrapped.

Perhaps some of the ladies would like to know how I do it. For their benefit I will say that, first of all, you must follow a different system.

First, use frames with full sheets of foundation and bottom-starters, with top and bottom bars not over seven-eighths of an inch wide, with the frames of one section directly over the frames of the under one; then the queen, as well as the bees, will go freely all over the hive and some kind of an excluder is necessary.

Second, handle sections instead of frames. In spring when using two sections to 12 L. frames most all queen-cells will be built at the bottom of the top frames, directly in the middle of the brood-chamber, and by raising the top chamber swarming conditions are apparent at a glance.

Third, when swarming fever starts put a section of drawn comb between the two brood sections, making the brood-nest 3 stories, equal to 18 L. frames.

Fourth, always give plenty of super room, and the problem is solved, and you will be happy forever after.

This system, with me this year, prevented swarming entirely and avoided those 57 varieties of tedious swarm control, and all of that Demaree business talked of so much. And, best of all, I got twice the honey with less work than I did before.

If you want comb honey, put your sections on the best hives after the flow is started and the danger of swarming is over, and don't put on any too late to have them finished. One-fourth or one-third comb honey is plenty to supply all demands.

I can uncap 100 pounds of honey in much less time in shallow frames than in regular Langstroth size, and some extractors will hold two shallows in one pocket.

A word about handling frames: In looking for queens, I can handle 20 of my frames as quickly as 10 Langstroth frames without bottom starters, but I don't need to find her except when I requeen.

I am not a bee inspector, but I have traveled with one, and when he comes to a side liner with 5 or 6 swarms in regular Langstroth hives, what does he say before he opens them? Immovable-frame hives; and some need a crowbar and knife to get them out; and don't forget that most beekeepers are side liners, and don't often take frames out, because they dread the immovable-frame hive. This dread would partly disappear with shallow frames, and many side-liners would graduate to beekeepers and be happy.

New Jersey.

Our correspondent revives something similar to the Heddon system which was so popular for a short time a generation ago. Many beekeepers thought that the ideal system had at last been discovered; but, unfortunately, it did not prove practical. In the hands of an expert, good results can be obtained, but without extra attention the bees do not thrive. Wherever the system was generally adopted, beekeeping suffered a great decline, and in many localities hundreds of beekeepers gave up the business as unprofitable. On the other hand, where large hives were used, the beekeepers continued prosperous and remained in the business. Results count far more than theory. Hundreds of pages were given to arguments in support of the divisible hive in the bee magazines of the olden days, but arguments were insufficient to convince the bees. There are very few beekeepers now who use the divisible hive, and the number is smaller every year.

There is much to be said in favor of a shallow extracting super. A shallow brood-nest is quite another thing.—F. C. P.

## HIVES IN GROUPS OF SIX

By Hy. W. Sanders

For the past two seasons our home yard has been arranged in groups each consisting of six hives, two of which face south, two east and two west. The idea was derived from a study of the various apiary arrangements, as we felt that the more usual arrangement of hives in long rows was causing us the loss of young queens. During the last season, when we had our hives in rows, two out of every five virgins failed to mate, and it was found that increase was thereby made very expensive, for our season is too short to allow for the retrieving of lost time. The search for the cause of the trouble led us to Langstroth, one of whose sentences is so full of bee-sense and common-sense that it deserves quoting here: "If a traveler should be carried in a dark night, to a hotel in a strange city, and on rising in the morning, should find the streets filled with buildings precisely like it, he would be able to return to his proper place only by previously ascertaining its number, or by counting the houses between it and the corner. Such a numbering faculty, however, was not given to the queen bee, for who, in a state of nature, ever saw a dozen or more hollow trees or other places frequented by bees, standing close together precisely alike in size, shape and color, with their entrances all facing the same way, and at exactly the same height from the ground?"

Dr. Miller's method of putting the hives in pairs was first planned, for he spoke an obvious truth when he said that each hive of the pair held an individuality, and that bees would only make a mistake where the pairs were arranged very close, and that in that case bees from a right-hand side hive would enter the right-hand hive of the next pair, and so on. Then came a study of the A-B-C, and the plan took shape. The hives were arranged in groups of six, as stated, and these groups, or units as we now call them, were then arranged in the yard so that the second row of groups were placed behind the gaps in the first row, and the third row behind the gaps in the second, and so on. Piles of spare supers were made in one or two places in the yard, partly to save time and steps and partly to help virgins to mark their hives. Some doubts as to the advisability of this were felt at first, for the removal of the piles was bound to occur in the rush of the honey flow, but it worked out all right, for the piles were unchanged while the queens were getting mated, and if any of the other bees got mixed up we never discovered it, anyway.

Since working with this arrangement a couple of seasons, a number of advantages have emerged that were not suspected when the yard was thus laid out. In the first place there is no need now of hive numbers. We used to have them made of tin, following Dr. Miller, and the number stayed with the stand. So if the body of the hive had to be moved, the number had to be transferred, and that took time Since the new scheme the units have been denominated by a letter and the hives composing it by the numbers from one to six. These numbers run the same with each unit, so that, for example, A1 is the northwest hive of unit A, B1 the northwest hive of Unit B, and so on. The record book now has its pages divided into six, to correspond, and when planning for work in the house it is a real pleasure to be able to "visualize" each hive as the cogitations go on. In changing the location of a hive, for any reason, it is only necesary to make a notation in the book. The colony automatically gets its number from its new location.

Then there is a saving of steps that is no small advantage. In the middle of each unit there is a vacant place about six feet square and the wheelbarrow with tools, etc., or if honey is being taken off, a hand-cart is brought to the north side of the unit where there are no hives. The six colonies are now just handy for work and can all be inspected without moving more than a step at a time. If brood or honey is needed, or any equalizing arrangements are going on, there is sure to be in the unit one of the six colonies that can spare what is needed. When honey is being taken off it is usually possible to get a load off one unit, and this saves a lot of journeying around to collect enough to go to the honey house.

This season, two more developements are being tried. The first is that during the early months the bees were studied and one sixth of the colonies chosen for increase, these being the best of the stock. In all cases the bees were worked around so as to bring one of the breeders to No. 6 in each unit. This A6, B6, C6, and so on, were all of good enough pedigree to be used for queen-raising. They were built up to good strength, and when the honey season really started, they were dequeened long enough to start them building queen cells. These having been started, others in each unit were treated on the Demaree plan, and brood raised to a third story, and the combs with started queen cells placed here. When ripe they were used for nuclei and this has proved to be the easiest and quickest method of increase from selected colonies that we have found.

The second experiment does not fit in with the first, and it has been tried out on a limited number of units at one end of the yard. Briefly, it consists of removing one hive of the pair at the beginning of the honey flow to throw the field bees into the remaining one. In addition to the field bees, all the brood and bees from the removed hive, except two combs, were added to the hive left on the old stand, and in fact only a two frame nucleus left to the removed colony. The results are justifying the plan, for the strengthened colonies are gathering honey very fast and have to have brood raised every ten days to keep them from swarming, while the removed colonies are building up well, and in some cases the process has been repeated, two of the removed colonies having increased to a point where they have been joined to one strong colony, the weaker being reduced to a two-frame nucleus and removed to a new stand.

Sanders hives in groups.

The picture shows two units of these nucleus hives at the end of the yard.

Manitoba.

(Louis Scholl, of Texas, places his bees in groups of five, but this is just as good. We usually place our colonies in rows, but they are in woods or orchards, where the trees and shrubs establish great differences in the flight, as bees select certain openings among the trees. When they come home through those openings they have only a very limited number of colonies to choose from, and if there are small plants or shrubs about the hives a very positive difference between them is at once noticed by the bees. It is important.—Editor.)

## FREIGHT LOSSES

I wish to say a word concerning waste on railroads, caused by careless handling by railroad men and other causes spoken of by Mr. J. D. Shields in the August number, 1921, page 320, of the American Bee Journal. The trouble is not all with the railroads, although the men they employ are sometimes careless. The loss by breakage is very often caused by the goods poorly crated, or poorly packed, from the desire of the packer to save material.

I am a house builder by trade and do some cabinet work and am often called on to do crating and packing for people who are about to move to other localities, and to repair furniture broken in shipment. I have a case in my mind of a man who moved from Pittsburgh, Pa., to Canfield, Ohio. Canfield is located about half way between Pittsburgh and Cleveland. This was not a very long distance to move, but the goods came badly broken. The furniture and dishes were broken. This man then moved to Cleveland. I crated and packed his goods and went with the teamster and helped pack them in the railroad car. Here is where a great deal of the trouble and waste comes in. It is the carelessness of the teamsters or draymen; they place the goods in the car without any regard to order, so that the car will not be full. The railroad crew does not take time to pile anything out of the way, but throw in freight, oftentimes heavy, on top of the goods. Result: broken freight.

In the case of this man moving to Cleveland from Canfield, we packed the goods on one end of the car; packed the goods that were heavy in the bottom, with light goods on top, as high as we could. After the goods arrived in Cleveland the man wrote to me saying nothing was broken.

Another time I packed a lot of goods that went to Washington, D. C., and went through without breakage.

I have sent extracted honey by parcel post a number of times to Pittsburgh, and never had any trouble.

Another thing will help to save

waste: Place two addresses on your freight or packages, for if one is lost you will still have another. Do not save your crating material. I believe the shippers are as much to blame for waste and breakage as the railroads are. A. S. Porter, Canfield, O.

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## SOME EARLY BEEKEEPING HISTORY

(Continued. See July number, page 276).

By G. W. Adams

The failure of the town of Newbury to continue and maintain a municipal apiary does not appear to have discouraged the individual beekeepers and Henry Rolfe, a neighbor, secured "stands" from the abandoned yard. In his will he bequeaths "To my kinsman, Thomas Whittear, a swarm of bees." In the inventory of his estate his bees are valued at 7 pounds 10 s, while his "muskett, fowling pieces and 2 swords and bandoliers" were considered worth only 1 pound 10s. Let us follow the bees bequeathed to "Whittear."

They were taken across the Merrimac to the Whittier homestead, in Haverhill, and under the care of the thrifty Quaker throve and increased. The farm was inherited by the brothers John and Moses, and a sister, Mary, kept house for them. John, returning from a business trip to Canada, approaching the house by the way of "Pear Tree Lane," just as he was crossing the little stream, the "brook of the barefoot boy, saw—

"Just the same as a month before,
The house and trees;
The barn's brown gable, the vine by the door—
Nothing changed but the hives of bees.
Before them, under the garden wall,
Forward and back,
Went drearily singing the chore girl, small,
Draping each hive with a shred of black.
Trembling, I listened, the summer sun
Had the chill of snow,
For I knew she was telling the bees of one
Gone on the journey we all must go."

The writer has it directly from the poet that "Telling the Bees" was not a poetic fancy, but that the incident was just as described in the poem.

The apiary existed until a few years ago, and as the homestead is now under the care of an efficient and loving board of trustees, the writer expects to restore it during the present summer. The latest collection of Whittier's poems contains a very pretty fragment, unfinished, descriptive of the home-coming of his grandmother, Sarah Greenleaf, when as a bride she crossed the Merrimac in her husband's canoe, and walking through the primeval forest came to the clearing where stood the new home, and "from the garden hives came the sound of bees."

In looking up the bees of Amesbury, the administration of the estate of Thomas Barnard, Sr., was of interest, not only as showing a good-sized apiary, but from a quaintness all its own. I venture to quote from the record:

"Estate of Thomas Barnard, Sr., late of Amesbere, who was killed by the Indians Oct. 9, 1677, to Elenor ys relict, with as many of her husband's children as she could get ordered to come to ye next Salisbury court for a division of ye estate."

The inventory presented shows, among other items, "8 hives of bees." What became of them is not stated, but the eldest son was given "a double portion," and of the real estate it is pleasant to know that "ye widow to receive ye Higgledee Piggleys with other land."

The first use of the word "hive" to appear in our county records is in the inventory of Thomas Barker, of Rowley, in 1650, "2 bee hives and some auld boards, 15 pounds, 7, 6;" the usual term being "stak," "stake" or "stall," and very rarely "stand."

The familiar word "skep," appears but once, and that in 1665, where Bridget Bradstreet, of Ipswich, bequeaths "to my daughter, Kimball, and my daughter, Walles, my 'skep' of bees, and my desire is that they give there furst swarms to their other too sisters."

From a careful study of the matter the writer is convinced that there were nearly—perhaps quite—as many people keeping bees in Essex and (old) Norfolk counties, in the decade 1660-1670 as in 1910-20, although it is hardly probable there were as many colonies.

There is strong temptation to write here of other things than bees, to show the conditions of life in those days, when nearly every farm had its little apiary. For instance, the Rev. Ezekiel Rogers, founder of Rowley, had "stak of bees (1661) valued at 3 pounds," while his "armour and ammunition" were valued at 5 pounds. Evidently women were then, as now, successful in beekeeping, for 17 years later his widow gives bees to Ann Nelson.

In 1662, John Andrews, of Ipswich, had "tow stocks of bees and tow swarmes." This John never had a "non-skid tire," but he was not only better off than his neighbors in that he owned "a paire of iron-bound wheels."

The same year the estate of "Willyam" Harkes, of Lynn, inventoried bees and also honey, "10 pounds at 17 shillings."

William Patridge, of Salisbury, not only had bees, but a serviceable match-lock musket to protect them, being better armed than Richard Kent, of Newbury, whose 'ffoure stakes" were valued at 3 pounds, while his cross-bow at only 2 shillings. Evidently in 1664, when this inventory was taken, the cross-bow was getting out of date.

In the foregoing researches, the writer has learned something of the bees, and not a little of respect for, and admiration of, the men and women who won this beautiful North Shore from the wilderness; and as he pens the familiar names, many of which are maintained in honor by their descendants still with us, there is a life and reality to this little history which will not leave the heart to be spread upon paper.

After 1670, bee culture declined so rapidly that a colony, which three years before would have been of equal value with three sheep, would bring but 3 shillings. There appeared to be no reason for this, either in change of purchasing power of money or in the presence of any substitute for honey and wax. Although sugar was gradually coming into more general use, it could have had no appreciable effect on beekeeping.

The fact remained, however, that in the space of less than ten years an economic asset greatly valued by the settlers had depreciated in value more than 75 per cent and the production of an article of food highly priced and for which there was no cheaper substitute, was practically abandoned.

Probate records show a decline in value to about 15 per cent of values three to five years earlier, and an apparent decline in the number of bees kept, fully equal to the decline in value.

Seeking a reason for this, we find in the inventory of John Neale, filed 1672: "Three hives of bees, 10 shillings, **being somewhat decayed.**" This is not a bad description of American foulbrood, and the writer is inclined to believe we have here the explanation sought.

Although Quinby was probably the first to recognize the disease in this country, Schirach was investigating it as early as 1771, and it may have been in the colonies with early importations; it is possible that, the country being sparsely settled, it may have burned itself out in a restricted locality and, for want of material, spread no further. Also, a colony sulphured was a colony disinfected, and it was customary to sulphur a dead colony to kill the moths.

Of course, it is possible the appraiser of Neale's estate used the word in the sense Latimer used it in 1550, when he says: "So order the matter that preaching may not decay," and Goldsmith, in the "Deserted Village" uses it in a similar sense, but evidently because he must have something to rhyme with "prey"; so, as this old appraiser was neither a preacher nor a poet, can we not believe he had, as in duty bound, seen the brood, and said just what he meant in plain New England speech?

So rapid was the decline in beekeeping that for the next 30 years—the period of a generation—we find nothing to show commercial value or practical interest.

It was not until the second half of the 18th century that the interest revived, although there is little doubt that a few widely scattered farms still maintained their little apiaries. Perhaps their remoteness had been their protection, and from 1770 to 1800 there was a considerable increase, as is plainly shown in certain old diaries.

From this time the advance was rapid, Langstroth beginning his work in Andover in 1836, Gould in Wenham a few years later, Alley in Newburyport and later in Hamilton, Chase in Gloucester and Malden, Knight in Haverhill, and others, all doing excellent work and worthy of remembrance.

Massachusetts.

## PACKING FOR WINTER IN COLORADO

By J. A. Tracy

A fine way to fix for winter in our most severe weather is to use a 10-frame hive, and reduce to 8 frames, with a division board on each side, and pack the space between them and make a slight frame to fit, bee-space high, with fly screen on the top. Make a small hole in the center of the screen if you wish to feed them in winter. Put on a super or body and fill with sacks or rags, and the bees will be warm enough to continue to raise a little brood, even in the dead of winter. A small can, crown top, with one hole made in center of lid with the point of a two-penny nail, or lath nail, will make a better feeder than you can buy. Don't punch a lot of holes. They can take the syrup plenty fast through just one such hole. You can open the top of such a hive any time in winter and give them syrup, if they are short of stores. The screen, bee-space high, over the bees, to hold the packing up, is a great advantage in that it allows the bees a means to get up over their frames in winter, instead of going around the colder sides. Try it.

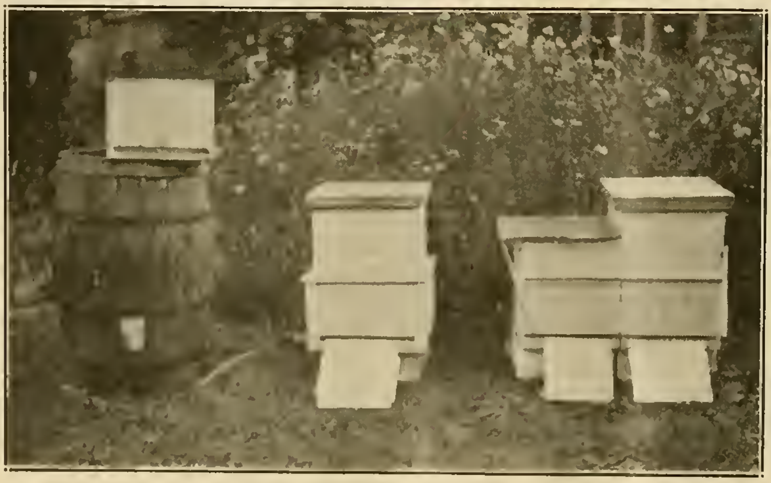
## WINTERING IN ONTARIO

By J. F. Dunn

I am sending you a photo showing how we winter our bees in Southern Ontario. In the center will be seen our light double-walled hive. We say "light" because it weighs, ready for bees, scarcely more than the ordinary single-walled hive of ⅞ inch lumber. By using a thin re-saw, we get three boards from 1-inch lumber, and both the inner and outer walls are of ¼ inch stuff. This may seem rather light construction, but when insulated with very heavy waterproof paper on both walls next the packing, it gives just as satisfactory results as we formerly got from ⅞ inch walls not insulated with paper and with 3 inches of sawdust or planer shavings between walls, and the hive is so light we can, when the colony is fed up for winter, pick it up and carry it with no more effort that with a single-walled hive of ⅞ inch lumber. We are in Niagara district (the fruit district of Ontario), where the thermometer seldom reaches zero and 1 inch of packing between walls is all that is necessary here. If we were using any other packing than regranulated cork 1 inch would not be enough. We live but a few miles from one of the few cork factories in America and know the "cork board" process from the raw cork to the finished product. "Cork chips," about which we read so much in the bee journals is simply raw cork broken up fine, and while it is rated high in insulation, it is in no way to be compared with what is known as "regranulated cork." Regranulated cork is a by product of "cork board." The raw cork as it comes to the factory is broken up into blocks and then pulverized into what is called cork chips. Cork chips is untreated cork, and contains volatile substances and some moisture. In the manufacture of cork board, the cork chips are treated to remove all the volatile substances that lessen insulation. It is then put under immense pressure and formed into large squares to fit between the walls of steel vaults or in large refrigerators. It is then passed very slowly through the ovens until it is thoroughly baked, and with the previous treatment every bit of moisture is driven out of it. While the raw cork will take up some moisture the treated product will not. After coming from the ovens the large blocks of cork board are squared up with special machinery and the trimmings are ground almost as finely as flour. Exhaustive experiments at one of our agricultural colleges placed this product just where we have always considered it, at 100 per cent, or the very highest in insulation. We have tested it for years alongside almost all known insulators and in our opinion it stands at the head.

### The Barrel Winter Nest

At the left stands the barrel packing case. It is some larger than the ordinary flour barrel and just right for a ten-frame hive placed on end. If packed with forest leaves it will do very well if given a coat of regular waterproof roof paint, but if any other packing material should be used I would wrap the barrel with waterproof paper. At the bottom of the barrel will be seen the strip of tin (showing white) that covers the fly hole ⅜ in. wide and 3½ in. high, cut in the stave. The tin extends below the fly hole to shut out the draft and prevent clogging with sleet. Before the hive, shown at top of barrel, is let down into the barrel (entrance first) a wire is passed around the hive to life it out by when unpacking. The hive rests on cleats 8 inches above the bottom of the barrel and forest leaves are packed in the bottom before the hive is put in. A "bridge" connects the entrance of the hive with the fly hole and the hive entrance is about 1½ inches above the top of the fly hole. No drafts, no matter how hard the wind blows, ever touch the inside of the hive. We can buy the barrels for 50c and sometimes less. We pack the barrel to the top with forest leaves and round the packing up at the top, tie a waterproof paper over the top, and we have about as snug a winter nest as could be given a colony of bees.



Dunn's winter plans.

### The Community Hive

How do you like it? Before they were converted they were just ordinary single-walled hives like their neighbor, setting on top the barrel. Well, we are in love with them and I guess we shall run a whole apiary on the community plan. We call it the community hive because there is no reason why there should not be a whole quartet of them, side by side, instead of a duet. The hives are exactly level and entrances may be reversed, every other colony. Like the old darkey's trap, it is "sot to ketch 'em goin' or comin." The front and rear of each hive are double walled. The sides are single walled and of ⅞ lumber. The hives can be used for supers or brood chambers. Bottom-boards are the ordinary ones for single-walled hives, except that we pack them with cork and insulate them with paper. We want the front of our bottom boards enough shorter than the fronts of the hive, that no ice or sleet ever touch the entrance. On the "weather side" of each outside hive we remove two brood-frames, wintering on eight frames. The empty space is filled with a cork packed (2 in. thick) dummy, the sides of which are covered with heavy cardboard (shredded wheat biscuit cartons are fine), and the cardboard painted with shellac; or, better still, melted propolis. This dummy is of ¾ lumber and hangs in the hive like a brood frame. We make it three-sixteenths inch shorter than the inside of the hive, front to rear, and cut the cardboard sides one-quarter longer than the inside measurement of the hive, and we crowd it tightly against the inside of the hive wall. A No. 12 soft wire is then passed around the cluster of nails and a round stick shown in the photos is twisted up until the hives are drawn so tightly together that no cold or frost can get in. A piece of insulating paper reaching from top of super to bottom of brood chamber, is placed between the hives before they are forced together. A similar wire is also run around the supers; a stick slipped under the wire and twisted up tightly. In the photo the deep super is packed with forest leaves and the half story with cork. We prefer to have the full depth super on the whole community with double-walled front and rear. At the advent of fruit bloom we take the packing from the supers, crowd in a dummy on weather sides of supers, fill the top stories with empty combs and get them by clover time as nearly as possible solid with brood. When clover opens up we put the queens below, put on the queen excluders, then a full super of combs and place the brood on top. At the end of ten days we take what brood we want for increase (we get very few swarms) and cut out the cells in the rest of the combs. Of course, we spread the hives apart at clover time. We pack the supers with any good insulating material that may be handy, regranulated cork, old forest leaves shredded up fine, finely cut straw, cork chips, forest leaves freshly gathered, sawdust and planer shavings mixed. We place them in the order we believe to be their relative value in bringing bees through the winter. We fill the supers with packing to within and inch and a half of top, put on the honey-boards, put a waterproof paper on top of that and covering all the hives. Then the regular covers. Any wet that gets in where covers touch each other is caught by the waterproof paper.

Ontario.

## SUNSHINE AND BEES

By Allen Latham

This is being written on January 13, the coldest day of the year in Connecticut thus far. It is a clear day with the wind right out of the north, the temperature ranging from 14 to 21 above. At 10 o'clock, when the temperature was about 18, I went to the apiary to look at the thermometer, which is thrust through the packing of a small colony which I am experimenting with. Just as I thrust the thermometer back a bee crawled from the tube entrance and took flight. I stepped aside that the bee might have an unobstructed return to the hive. In less than three seconds she came back, glad to crawl into the warm interior of her home.

Some of my readers may see nothing remarkable about the statements in the paragraph above, but I see enough to warrant writing a few more paragraphs relative to the suggestions which rise. Now we are ordinarily taught that bees cannot safely fly unless the temperature is at least 50 in the shade and are told that even then the wind should not be blowing. But here a bee flies when the temperature is 22 degrees lower than is safe, and there is a brisk wind right out of the north. How is this to be accounted for?

That bee was a healthy, strong bee. As soon as it felt the chill of the air it returned briskly to the hive. Had it been a sick bee or a weakling it would have flown dizzily about, would soon have lighted on some object, and probably never have returned to the hive. It is true that a general flight of bees when the temperature is much below 50, or when the wind is blowing, is often disastrous. It is not true that healthy bees are lost when they fly out during a bright winter day.

A few days ago an amateur wrote to me expressing regret because he had not been at home a certain day recently when his bees took flight. He had his entrances shaded against wind and sunshine. The bees found it difficult to get out and back with the obstructing boards in place. Many bees were lost because of getting chilled before they could find their way back into the hive. Had the beekeeper been there he would have removed the boards and thus allowed the bees a free pathway.

Are such boards a detriment, or are they of real value?

Personally I consider such devices, as a rule, a real menace to the good health of the colony. There may be isolated instances, such as colonies with a northerly exposure, in which a benefit might accrue from the boards being in place; but under all ordinary circumstances those boards are worse than valueless, for they are a source of harm to the bees.

When I say the boards are a source of harm I do not refer to the loss of bees that might occur in case the bees had a flight in the absence of the beekeeper, but I refer to harm that results from their presence upon any sunny day. I venture to say that there are no animals that are more in need of sunshine than are honeybees. Sunshine is a tonic to bee life, it is the natural panacea for all the ills of bees. Nothing so invigorates a colony of bees as a sunny day.

I like to have the sun shine into the entrances of my hives. What if it does entice a few bees to fly out? Ten to one all healthy bees that fly out succeed in returning. Those that do not return would have died in the hive within a few days anyway. Personally I prefer to have bees die outside rather than inside the hive. Dead bees in the hive have absolutely no value, and when accumulated in quantity are extremely detrimental to the welfare of the colony. It is quite possible that a colony exposed to the full glare of the sunlight all through the winter might have a few less live bees the middle of March than if it had had its entrance shaded. But would it be true that the same colony would have less bees three weeks later?

Eight thousand bees that are vigorous the first of March will carry along a colony better than 18,000 that are sickly. By the end of three weeks only a thousand or two of the eight will be gone, whereas 14,000 or 15,000 of the 16,000 will be gone. By the 10th of April the colony which has had the invigorating effect of sunny winter days will be better off than that colony which has not had the benefit of sunshine. After thirty-six years of experience in wintering bees outside, I now have absolutely no use for boards to shade the entrance. I like the sun to be on those hives not less than four days of every week of the year.

Last winter (1919-20), one of the most disastrous to bees for a generation, there were some six weeks during January and February when the sun scarcely appeared to view. Day after day of clouds with a low temperature. For eight days at a stretch we did not have ten minutes of continuous sunshine. Bees could not carry out their dead; the dead accumulated about the entrance. Colonies were unusually strong in old bees, as no fall flow of honey had killed off the field force. By the 1st of February nearly every colony had its entrance completely covered with dead bees. In some cases the dead lay two inches deep about the entrance. Then came a sleet storm which sealed the entrances with ice. The result was awful.

This winter mild temperatures and sunny days have allowed the bees to carry out their dead on the average of twice every week since the first of December. The hive bottoms are today as clean as in summer, except for a few capping-gnawings. Bees are so snappy that they fly out into the cold air with impunity, at once returning when they feel the chill. Let the sunshine in.

## WINTERING BEES IN THE SOUTH

By L. B. Smith

Having had many years of experience in wintering bees in a warm climate, much the same as Southern California, I thought a few lines on that subject from me would be permissible, especially as I am asked that question frequently.

This will, if used, appear a little out of season, but most real beekeepers save their Journals and read them at their leisure time; it may be useful to them later on. I don't think, but know, the very best place for all combs is in care of the bees, here in this warm climate, let that be winter or summer.

I have many colonies now tiered up four and five stories high, with full depth bodies, and I will have as strong colonies, or stronger ones, in these tiered up hives, as the man who has gone to the extra trouble and expense of removing and caring for these combs.

As for perfect wintering, I would not give five cents to have every colony insured. "Oh!" says one, "haven't you read what Prof. Jiggs says of the winter problem in the South, or our Government Expert, Jimmy Jones, has said?" Sure, I have read most everything published in the various books and journals, for many years, concerning bees.

With all due respect for our Government experts and professors (they have taught us much) it is hard, at least for me, to believe that all this talk about the winter problem and winter protection in the Southern States is necessary.

Let me give the very best packing a colony can have in any of the Southern States, that is, a good strong colony of bees with a young, prolific queen and 50 to 60 pounds of honey. This may seem extravagant as to the amount of stores, but is not a bit too much for our warm climate, when bees fly most every day and often keep up brood rearing all winter.

With the above condition present, I would not hesitate to insure perfect wintering of every healthy colony of bees in any of the Southern States. Pay no attention to the number of combs a colony has, let it be one or five supers.

The only requirement is to contract the entrance against the mice and robber bees, as we have so many days that bees can gather nothing to speak of, through the winter, so robbers often become a real nuisance in the South.

Now, to the doubting Thomas, let me say: Try half your colonies packed my way, the other half packed the real orthodox way, with all surplus combs removed and the usual 25 to 30 pounds of stores to the colony.

I would not have you believe that I think these extra combs of special advantage to the wintering of your bees. I am equally sure that they are in no way detrimental.

The combs are always safe in the care of the bees, not so otherwise in this warm climate, for we often have warm weather here, even in midwinter, when the larvæ of waxmoths seriously damage, or destroy combs.

I noticed in Mrs. Grace Allen's department, in Gleanings, that she tried packing the bees in Tennessee and it proved of not practical benefit. I know there are many things said by prominent writers of the North that are all right in the North, but will not stand up when put to a practical test in the South. Most of the Northern writers say: Face your hives to the south, or east, for best results. This, no doubt, is good advice where bees are confined for weeks, even months, to their hives without a flight.

Here hives facing north or west, are more favorable to the bees than a south or east exposure, especially where bees have almost daily flight. It is not the greatest, but the fewest number of flights we want our bees to have here. All practical beekeepers know these daily flights mean a large consumption of stores and a heavy tax on the strength and vitality of the bees.

Texas.

### The Bees

When winter winds have ceased to
blow,
And sun has dried the mud and snow,
The bee man hurries to and fro
Among his hives.

He takes the winter wrappings off
And with a deprecating cough
Informs the bees the lid is off,
It's time to work.

Some colonies are good and strong,
While others need a boost along;
Perhaps increasing late was wrong,
Unite a few.

He hunts each queen from hiding
place,
And makes her promise to his face
That she will propagate a race
Of workers strong.

Each comb is lifted out with care
To see what are conditions there.
It's a lot of fun, but I'll stay where
There are no bees.

—Nellie M. Sheldon.

## BEEKEEPERS BY THE WAY

### A Maine Beekeeper

There is a very general impression that New England is poor country for beekeeping. Lester W. Longfellow, of Hallowell, Maine, is a beekeeper whose returns compare favorably with those of many sections famous for honey production. Mr. Longfellow is President of the Maine Beekeepers' Association and is devoting much time and attention to the interests of the new organization. In partnership with his brother, Longfellow keeps 300 colonies in several yards. The average return is about 100 pounds per colony in Northern Maine, and about 75 pounds in the central part of the State. He states that there is much good territory which is unoccupied in Northern Maine. Clover is the principal source, with some good raspberry locations and some places where fireweed is abundant.

Lester W. Longfellow, President of Maine Beekeepers' Association.

### BEES AT SORGHUM MILLS

I am a beekeeper and live on a farm and make more clear money from the bees than we do from our 100-acre farm. I have increased until I have 100 colonies in fine shape for this season. Last year I began the season with 86 colonies and sold $1,162.90 of honey. I am having a little trouble with swarming; have had 5 swarms so far, but am trying to hold them together until I can begin to extract; after that I will not be troubled. I am stating these facts so that you may know that I am a beekeeper. The last year or two of scarcity of sweets of all kinds developed the industry of sorghum making near by.

Last year there were three sorghum mills located as follows: One one-quarter mile, on one-half mile and one three quarters mile from my apiary.

Last year being dry, fall flowers were rather scarce, causing a dearth of honey, so these sorghum mills attracted the bees, and they swarmed around them so badly that they caused much annoyance and trouble to the operators of these mills. I lost my field bees by the millions, consequently I did not get my usual fall crop of honey. However, I heard no serious complaint by the sorghum men. I think they bore the trouble well, because they thought they were ruining my apiary for all time.

I have heard it rumored recently since they see me doing business on the old stand with more bees than ever, that they are going to put me out of business this fall; and they really believe that I will have to kill out my bees if they insist, because it interferes with their business. I would like to know what my rights are as a beekeeper and what course I should pursue to be doing the right thing by them and myself as well.

I have a fine home trade on honey and I have a ready sale at all times; can't possibly supply my trade.

Each of these mills is operated out in the open and their output is only a few hundred gallons. My crop of honey is worth three times as much as the entire output of these mills. I would like very much to see this discussed in the columns of the American Bee Journal; perhaps some reader can and will advise me what to do in case conditions cause the bees to interfere with the sorghum men. With a good fall flow, I hardly think the bees would bother the mills. I will add that I have been keeping bees ever since 1902; have never had any trouble with my neighbors on account of the bees. H. C. Gadberry.

Missouri.

Answer: This is one of the unfortunate happenings of bad seasons. Sorghum mills, cider presses, wine presses, candy stores, dry fruit preserving and dozens of other little industries not only suffer from the bees' short crop, but cause the bees to suffer, since many of them get drowned or killed in the vats, in the presses, and wherever sweets are gathered.

This is not the only harm it does to the beekeeper. His bees gather some of this objectionable stuff, whether cider, wine or molasses, and when this is stored in the cells, it is apt to make them sick during the winter, for most of it will sour in the cells and give the bees dysentery or diarrhea.

Luckily, this happens only one year in twenty, or even less. We remember the fall of 1879, when all those of our neighbors who had either cider or wine to make cursed our bees and their owner. But it never happened again, and the neighbors now know that in such an occurrence we are as much the losers as they are, if not more.

If this should happen again to you in such a way as to make the matter irksome, it would be best to try to have an understanding with the makers of sorghum molasses. Since it is a loss to both, and they cannot compel you to move any more than you can compel them to quit, the best thing to do would be to put up sheds in which to boil the juice. A sorghum boiler ought to be under a shed, owing to the number of wasps, flies and other insects that drown in the hot juice, and there might be laws passed compelling it, in order to make the molasses more healthy to the consumer. Could you not get them to agree to get under shelter and spend a few dollars to help them do it? It would be better than going to law about it. What say our readers?

## DECEPTIVE HONEY FLORA

By John Prothero

Every beekeeper who maintains a close observation on the honey flora of his neighborhood will have noticed the difference in the behavior of the bees during various flows, and the discrepancy between the fuss made over certain blooms and the amount of nectar stored. Some flowers seem to fascinate the bees and to keep them busy without giving a corresponding yield. Catnip is often mentioned as an example of this. Bees will gather on a clump of catnip and fuss with a great air of business, yet the general verdict is that they get little nectar. This phenomenon sometimes leads the enthusiastic amateur into futile expenditure. He will plant catnip or mignonette or sunflower in quantity on a patch of waste land, where sweet clover could be put to better advantage.

Of course, this is like growing wheat in flower pots to provide the household with bread, but the enthusiastic amateur is to be encouraged, even if he only plants a quarter of an acre of bee forage.

This season I have noticed trifolium arvense, or rabbit's foot clover, as coming into this category. The common white clover produced little or no nectar and was neglected by the bees for this modest purple-grey relative. Here it occurs in great quantity in pasture and waste land, and observation this year would have led one to suppose that a considerable honey flow was on. The bees were thick on it all day and hustled from bloom to bloom in their most professional manner, but examination of the combs showed that it was much ado about nothing. The tubes are so fine and so numerous that one readily understands what a tiresome and unremunerative job it must be. The busy bee is wanting in a proper sense of economics; she will expend a dollar's worth of energy to get a 75-cent return. She does it because she is driven by instinct, which, like justice, is blind. Primeval man spent a month rubbing a flint into an arrow head; he was driven by personal dislike of a neighbor, and, being gifted with reason, considered the motive adequate.

Sweet clover I should bring forward as being the opposite end of the pole to catnip and rabbit's foot clover. There is a quiet, steady, unobtrusive industry about the apiary when the sweet clover harvest is in full swing that is most deceptive. When the orchards are in full blossom in April there is an air of desperate hustle which is absent during this later and more productive flow. Unless I am mistaken, there is in fruit blossom time less swaying and zigzagging in their final descent to the hives; they come back full pelt with the same directness with which they go out. During sweet clover they come home with a quiet, swaying movement and a contented hum. Can it be that their instinct tells them that there is every need to hustle over the fruit blossom, but that there is plenty of time with the sweet clover? I seem to have noticed a similar rush over the buckwheat, which here yields from about 8 to 10 a. m. After this is over they settle down in a more leisurely manner to search through the expiring sourwood supply for any pickings there may be left. Their demeanor is quite different. For those two hours in the morning there is fierce concentration of purpose; afterwards it is jog through the day's work and enjoy life.

I may be advancing a fanciful theory, but it seems to me that there is a direct relation between the duration of a flow and the behavior of the bees while it is on, a relation which does not correspond with the quantity of nectar being brought in.

My belief is that more nectar is brought in with less fuss during a day of sweet clover than during a day of fruit blossom or buckwheat, making every allowance for hive strength. Perhaps it is not right to class fruit blossom and buckwheat together, for in one case the bee takes a long, strong pull and in the other rushes desperately from one small blossom to another, yet in both instances there is an imminent stoppage of the flow to spur them on. The beginner is often deceived in this way on the supering question. He imagines that there is comparatively little doing and lots of room at a time when things are filling up very rapidly; again, after a spell of great superficial activity he is dejected to find poor results. This is one of the matters which make knowledge of your locality two-thirds of beekeeping. A good honey flow in one neighborhood and season becomes unproductive fuss elsewhere. One is often surprised to hear the lukewarm manner with which a beeman from 50 miles distant will speak of a plant that gives one excellent returns, and vice versa. Around here men speak meanly of white clover, though there is plenty of it; 60 miles to the west it is the main honey crop. Verily there is no end to the "reports" that might be written on honey flora and their value; even State lines and counties would not make satisfactory divisions. Such reports are interesting and informative, but the beeman has only one safe guide to follow—make your own observations, draw your own deductions, and originate your own practice accordingly.

Virginia.

## CHILIAN BEEKEEPING

Dear Mr. Dadant: I believe that I wrote you a few years ago, that we did not have either moths or foulbrood in Chile. I am sorry to say that it is not so now. I believe that I have foulbrood in my apiaries and wish to ask your advice, for description and cure. I have 11 apiaries, 6 in the mountains, 5 in the plains. The former, having no neighboring apiaries, are safe. The others are surrounded with smaller apiaries. As I was certain that there was no foulbrood, I did not take any precautions concerning hives, combs, supers, honey for feeding, etc., and used to carry things from one apiary to another without fear. So I have probably scattered the disease myself.

Last winter a Chilian apiarist who owns over a thousand colonies in box hives, told me that he had to buy 200 to 300 hives of bees every year to sustain the number of his colonies, as he lost so many that the natural swarms did not replace the losses; that the colonies died with plenty of honey but no bees. I did not pay much attention to his statements. But this spring, after having had more swarms than usual, about 20 per cent. I noticed that many colonies were getting weak during the dearth that usually follows the swarming season. When the alfalfa season came, they were reduced to the size of nuclei. The queens were still large and fine looking, but there was very little brood, almost nothing but eggs. The larvæ must have died as fast as hatched, perhaps killed by the food given them. Rarely could I see a big larva, dead and yellowish in color. But they did not have any bad smell when rotten, and the color was gray, not brown, without any ropiness. There were only a few in that condition, as the bees appeared to dispose of them. Rarely was there a sealed cell with a hole in it.

During the honey harvest they did not improve, so I united them by twos and later doubled them again, so that many families are formed of 4 colonies and have hardly strength enough for winter.

Without any disease, I could care for a large number of colonies, but with diseases I will have to shrink my output. Besides, the prices that we are getting for honey are only about 40 per cent of last year's prices; exchange is low, and all imported articles are out of reach in price. That is enough to discourage any one. It takes 100 kilos (220 lbs.) of honey to pay for an ordinary umbrella; the same amount to pay for a case of gasoline; 600 kilos (1,320 lbs.) to pay for a rubber tire 31x4 for my auto. I understand that your beekeepers are better off, and it gives me great desire of coming to the United States and see. Perhaps I will come some day.

Do you use the capping-melter? How does it succeed? Does it damage the honey? I have considerable trouble with small particles of cappings that gather on top of the honey after extracting, and as I have so large a quantity (509 barrels this year) I want some good method of getting rid of these cappings. I do the extracting in a tent the edges of which are held down with big rocks, excepting the front, which is allowed to drop to the ground as we go in and out. I would like to have a central plant, but it is out of the question, on account of bad roads and long distances. Last year I had typhoid fever in the middle of the summer and had to delay extracting until cold weather. I did the work when there was snow and rain and had to warm up the supers with a stove under a pile of them, in order to warm up the honey so as to uncap and extract.

Let me hear from you, please, with advice as to what you think of the situation. G. J.

(It looks as if our correspondent's bees were suffering from some disease like European foulbrood. We are sending him some information on the subject.—Editor).

## THE CENTURY PLANT

In the Southwestern States, Mexico and Central America, there are a number of long-lived plants, commonly spoken of as century plants. These belong to the genus **Agave**, more than 138 species of which have been described. Many of them are native to Africa and desert regions of Asia. Coulter lists seven species as native to Texas, and some others are to be found in Arizona, New Mexico and California.

The flower stalks often rise to a height of forty feet or more and are a striking feature of the southwestern landscape. The fleshy leaves are armed with thorns or prickles to resist attacks of hungry animals, and the thick leaves hold large quantities of water, so they are well adapted to survive in a region of almost constant sunshine and little rainfall.

The plants grow slowly, usually maturing in from three to fifteen years in their native regions. Although the bloom is infrequent, enormous quantities of nectar are available when the plants do bloom. There are few plants which yield so copiously. The picture gives a good idea of the appearance of the plant before the flower stalk appears.

## SAVING A CHILLED QUEEN

By Elias Fox

In April, 1920, we had some bad weather. One morning while looking for bees which might be short of stores, I noticed a double handful of apparently dead bees outside the entrance of a hive. On top of the pile was a nice yellow queen. On picking her up I could detect no signs of life, but placed her on the kitchen table about 8 feet from the stove. After half an hour she still showed no signs of life, but an hour later I found that she had turned over on her feet, but showed no apparent movement otherwise. A little warm honey placed directly under her tongue had the desired effect, and in a few minutes she was able to walk about.

The hive was then brought in and a handful of the bees likewise revived. In a couple of weeks I found they had two small patches of brood, so the remnant was transferred to a colony which was queenless. Later a strong colony resulted, and the chilled queen with her offspring produced as much honey as others which had been more fortunate.

This queen was the nearest gone of any with which I have come in contact in my 40 years as a beekeeper.

Wisconsin.

Century plant in Southern California.

## THE QUEEN MATED, BUT COULD NOT LAY

By Vernon H. Jeffries

While transferring some of my bees from some of my nucleus boxes I found one of my queens with a little hard substance that resembled an egg hanging on to her. I knew that there must be something the matter with her, for all of the other queens that were put off the same time were laying right along and were doing fine.

So I caught her and pulled it off of her just with my fingers alone, and when I turned her loose she took wing and went into another hive close to where I was working, and of course the bees balled her at once, knowing that she was a stranger, and I had to work in a hurry to get her out of there. So I caught her and put her in her own hive and the rascal flew out again. I put the top on and made a note of the hive in my note book, so I could give them a queen cell or brood, and they could go on to work.

Two or three days after giving brood I went back to see how they were getting on, and the first thing I saw was a very nice looking queen running over the combs dropping eggs in every cell the same as any other queen I have.

I saw a piece in the American Bee Journal some time back something similar to the above, and I suppose that helped me out a lot. I will be on the lookout for such things hereafter and maybe can save a good many queens.

Louisiana.

(Usually when queens mate, the organ of the drone remains attached to the abdomen of the female. Usually the workers pull this away. Evidently in this case it had not been done, and it is quite probable that she could not have laid any eggs if you had not helped her out.—Editor.)

## RULES FOR THE PACKING OF BULK COMB HONEY

A recent bulletin sent out by the Texas Honey Producers' Association gives their rules for the packing of bulk comb honey. As the packing of this article is practiced more than in former years, we give them herewith:

Pack in new cans only.

Use 3, 5 and 10-lb. friction-top cans, putting most of your crop in 10's.

Use only white comb, drawn the present season, and made on thin surplus or extra thin super foundation.

All comb must be completely sealed.

No comb in which brood has been raised or that is discolored from any cause can be used.

Use only the pieces of comb cut in square blocks. The comb should be of a size to just pass through the mouth of the can, and then lie flat.

Fill the can with comb first, then

fill with extracted honey until the net weight is made up.

Extracted honey used must be white and of the same flavor as contained in the comb.

The extracted honey must be free from all foreign matter.

The extracted honey must have been heated to a temperature of not less than 120 degrees F. and not more than 145 degrees F., and carefully strained.

All cans must have the lids properly placed and must be clean.

All bulk comb honey sold through the Association must have the Association label affixed by the producer.

All bulk comb honey returned to the Association by the jobbers, or that should not have been correctly packed, will be prepared for sale as extracted honey by the Association, at a charge of 2 cents per pound, and the cost of the new containers.

# THE EDITOR'S ANSWERS

**When stamp is enclosed, the editor will answer questions by mail. Since we have far more questions than we can print in the space available, several months sometimes elapse before answers appear.**

## Tobacco Smoke

I always use a veil, but once left it at my apiary in East Texas; so I put a cigarette in my mouth and smoked it till I got through with them. I took the frames out one by one to see how they were, and not a bee came around my face. I think if one has no veil and has a cigarette in his pocket he may use it as a veil. What do you think about it? I do not smoke much, but I tried it on my bees and it seemed to work all right.

TEXAS.

Answer.—That is the Swiss and German way. They sell pipes for beekeepers. A cigarette will do, but it would take a great many for a day's work. It would be rather expensive. Then it is not exactly proof against stings, for some bees may get angry. In addition to this, not everybody is fond of tobacco. However, we do not wish to be exclusive and are quite willing that those who like tobacco should use it.

## Prior Rights

Could you please tell me if there is a law in the State of Wisconsin forbidding people keeping all the bees they like? We bought our farm in the year 1919, with the intention of keeping bees, but before we got our apiary started there was another beekeeper bought 30 rods south of us and moved up here with 130 colonies, the same fall. He was telling me that seeing he was here first I had no right to keep more than 25 or 30 colonies. in the same neighborhood WISCONSIN.

Answer.—There is no law that we know of to keep people from having as many colonies as they see fit on the same piece of ground. But there is no doubt that there is a moral right for the first man who keeps bees, to the spot which he occupies.

Moreover, it will be profitable for neither the one nor the other to have too many colonies in the one spot.

So our advice to you would be to keep your bees a couple of miles away, or even farther. It is certainly unfortunate that you should not have started first with bees in that spot.

We have a great many of our bees in outapiaries and we often find it more profitable to keep them away from home than right at home, as our home location is not very good. It does not take very much time to get to the outapiaries, and we have a free field for the bees.

## Inbreeding

I started with one colony of bees, headed by a select tested queen. Now have two daughters and two granddaughters from this queen and no new stock has been introduced. One of these granddaughters is a large, fine-looking queen, while the other is only an average size These queens have just commenced to lay. If they fill the combs with brood would there be any advantage in requeening with stock from a reliable queen breeder? I have read that inbreeding tends to produce smaller and less hardy bees. Is this correct?

WEST VIRGINIA.

Answer.—With this small number of colonies you need not be afraid of in-and-in breeding, for there must certainly be other bees in the vicinity. The only thing you need to bother with is to make sure that your queens are purely mated. This is probably doubtful, unless the bees in the neighborhood are Italian. If your queens are purely mated, you run but little risk of inbreeding. But if they are ill-mated, then you had best get additional stock from some breeder.

Inbreeding for a long term of years does produce less hardy bees, though we have never noticed them getting any smaller.

## Cross Bees

I have bees in a bee house and they are very cross. A neighbor tells me that bees are always cross when kept in a bee house. What can you say about it?

Answer.—There can be but one cause to make bees angry which are kept in a bee house; that is if they are on a floor or the hives are all in one wall fastened to each other. When you go in the house, the least jar of the floor will disturb the bees and they will be on the alert. Similarly, if they are in a wall all fastened together, when you disturb one hive, the other colonies will all feel the disturbance and will be apt to resent it. It is well to have each colony on its own stand, entirely separate from all others. Then when you disturb that colony the others do not know anything about it. Always smoke the hives at the entrance before disturbing them, for the first thing that happens when you touch a beehive is for the guards to rush out and discover the cause of the disturbance. Woe to the enemy then! But if they have been frightened with smoke, you can open the hive and continue with a slight amount of smoke without difficulty. Many of our most practical apiarists do not take the trouble of smoking at the entrance before opening the hive, but if you talk to them, they will acknowledge that they often have angry bees and that this is one of the reasons. We all make that mistake more or less and pay for it in stings.

## Transferring—Packages—Nuclei, Etc.

I have four colonies in 10-frame hives, but the comb is crossways. I want to transfer these four colonies of bees into new hives with frames of full sheets of foundation and give them new queens, also. The combs are about three years old, and the frames have never been taken out of them during the three years.

1. When do you think I ought to make this transfer? Could I do it this month yet, or wait till spring?

2. Is it simple to requeen bees?

3. When I make this transfer, would it be all right to feed this honey back to them, from the old frames?

4. I want to buy 25 3-lb packages of bees with queens next spring. Are 3 pounds of bees enough?

5. When would be the best time to have these bees shipped?

6. My neighbor was telling me bees from the South are not prolific in Wisconsin; they don't do well. Is that possible?

7. I am going to give them frames with full sheets of foundation. It that the proper way?

8. I noticed in the Journal some queens are as high as $12 for breeders. What is the difference between these breeders and queens they charge $2 for?

9. What does "nuclei" mean? I noticed ads. in the Journal, from 1 to 5-frame nuclei for sale. Is that a colony of bees with combs full of brood or honey? I am a beginner, and am anxious to learn bee culture.

WISCONSIN.

Answers.—1. Transfer your bees in spring. It is the best time, because they are not so heavy in either brood or honey as they are at other times. Get a text book and follow instructions; it will pay you.

2. Requeening consists in finding the old queen and killing her; then introducing a young queen. It is not difficult and you can even do it with immovable combs or box hives, by driving the bees out, finding the queen among them and killing her.

3. Yes, it is all right to feed back what honey the colonies have at the time of transfer. They may need it.

4. Three pound packages make very good colonies if they are secured at the right time.

5. Have them shipped so they will reach you at the time of fruit bloom

6. I don't believe your neighbor has had much experience with package bees. If they reach you in good order and you look after them and see that they do not suffer for want of something to eat, they will do well.

7. Yes, give them foundation and sufficient food, in case of bad weather or shortage of flowers.

8. The queens which are advertised as "breeders" at $10 or $12, are queens that have been tested as to the honey producing qualities of their bees and their own prolificness, and are among the very best in the apiary. They are worth considerably more than ordinary tested queens. But if you buy 15 or 20 untested queens from a breeder you may find one or two "breeders" among them, for they are usually young queens and have not yet shown what they can achieve.

9. Nucleus, nuclei, means one or more small colonies of bees; say two, three, or four combs with bees, brood, queen and some honey and pollen.

Be sure to get some book and read it. You will get several times the value of your money in information from it.

## Keeping Honey—Why Bees Root

1. Will extracted honey keep best in fruit jars, air tight, or is it all right to keep it in 5-gallon crocks, just covered?

2. Why do bees gather in front of the hive and step back and forth, rubbing their noses on the board? When I lift up the cover I find them doing the same thing inside. They look like a bunch of hogs, all rooting.

NEBRASKA.

Answers.—1. Well ripened extracted honey will keep well in sealed jars. But it will also keep well in crocks or tanks, if these are placed in a warm, dry room. Honey will be really benefited by evaporation, if the weather is hot.

2. In this case, Dr. Miller's reply, "I don't know," is well fitted. Perhaps the answer to this question has been found. If so, let us have it. Everybody is welcome to a guess.

### Feeding for Winter

Please tell me how to prepare granulated sugar to feed my bees so it will not granulate in combs again It has been so very hot and dry here it has burned up all bloom; will have to feed. INDIANA.

Answer.—Two pounds of granulated sugar for every pound of water, or 16 pounds of sugar for each gallon of water. Melt it thoroughly, then add about two pounds of good honey. This will prevent its crystallization. You may make it as heavy as 20 pounds of sugar to a gallon of water. If the bees take it slowly they can invert the sugar in their honey sacks, so there will be no need of honey. But when you feed fast they cannot keep up a sufficient amount of saliva to invert the sugar, hence the need of honey. This may be replaced by the addition of about a half ounce of tartaric acid to each gallon of liquid, which causes the same effect.

### Honey From Poison Ivy

There is an impression here among our older residents that honey has at some time poisoned some member of their families by being gathered from poison ivy. As I am trying to build up an apiary here, I would like to be in position to refute such statements authoritatively. Will you therefore kindly advise me through the American Bee Journal as to whether poison ivy yields nectar, and, secondly, does such nectar (if any) necessarily poison the honey? Would poison ivy honey be dark, or light; bitter, or have any other distinctive taste? NEW HAMPSHIRE.

Answer.—Poison ivy (*Rhus Toxicodendron*) is reported in Pellett's "American Honey Plants," page 252, as secreting nectar. We are inclined to believe that this idea of its producing poisonous honey is simply an opinion which is not based upon facts. Some people can never eat honey of any kind without becoming sick. Their stomachs apparently do not assimilate it well. Of course, if any bees had been seen on poison ivy the tendency would be to charge it to the plant. Yet, the proportion of such honey in a crop would be so very insignificant that it would not be noticeable.

### Feeding to Finish Sections

I have seven colonies of bees. I have supers on some. I would like your advice on the following:

Would it pay me to feed it at night time? The idea is for my bees to complete filling the capped sections with said honey. I can buy sweet clover honey for about 16c per pound. Can sell my capped sections for 30c per pound. Would the bees try to force it into brood frames and leave not enough room for queen to deposit eggs? NEW YORK.

Answer.—For completing sections which are already partly filled, it may pay you to buy honey at 16 cents, if you can sell sections at 30 cents. But you may count upon the bees using a good portion of that honey to breed, and also to build comb; so that you will not find it very profitable. Just how much is a question which we cannot settle any better than the question of how much it will pay you to feed a certain amount of corn to finish fattening your hogs. The result is not always the same.

### Fumigating Comb Honey

1. What is the best for fumigating section honey?

2. How much should be used for a given number of supers filled with comb honey?

3. How often should comb honey be fumigated? NEBRASKA.

Answers.—1. You may use burning sulphur or bisulphide of carbon.

2. Prof. Paddock recommends one quarter ounce of sulphur burned under a pile of supers, for every cubic foot of space. That is plenty. Be sure and have a few empty supers between the burning sulphur and the combs, so the sulphur will not melt the combs. The sulphur is usually sold in "wicks" by druggists, and burned in a metal dish. The bisulphide of carbon, poured over the combs or soaked into a cloth, may be used in quantities of one-eighth ounce per cubic foot. It is inflammable and a light should not be brought near. As it is heavier than air, it should be put at the top of the pile.

3. In ordinary circumstances two fumigations, about two weeks apart, should do the work. The second fumigation is for eggs which are not yet hatched at the time of the first fumigation. Of course, the combs should be kept in a closed room where the moths can have no further access to them.

### Winter Packing

How would it do to pack winter cases of bees with pine needles? We have plenty of them and during the winter we frequently have periods of three weeks that it is 25 degrees below zero. NEW HAMPSHIRE.

Answer.—Pine needles would probably be very good. I do not believe that this packing has ever yet been suggested in the Journal. Try them and report how you succeed.

## ODDS AND ENDS

### The Right Spirit

I wish to add a little towards the memorial for Doctor C. C. Miller. I deeply regret that I never had the opportunity of meeting him personally, but yet I think of him as a friend. One seemed to become acquainted with him through his writings.

I am sorry that I cannot do more. I am a boy 19 years of age, attending the University of Wisconsin. I find that it is a great deal easier to write out checks while at school than it is to make deposits.

So, with best wishes, I send this remittance from a small beekeeper with a large amount of enthusiasm for the remembrance of a large beekeeper with a large amount of enthusiasm.

Walter A. Kuenzli,
Wauwatosa, Wis.

### Annual Sweet Clover Coming

Annual white sweet clover, generally known as Hubam sweet clover, will soon be available to everyone.

News comes of a farmer in Clark County, Ohio, who sowed 80 acres to this crop in the spring on his farm near Springfield. Mr. James Kitchen, the farmer, expects to raise the crop for seed.

### One Reason Why Honey is Low

We try to sell our extracted honey too rapidly. It will keep. People eat it the year round and buy it every week of the 52. We are foolish to try and force its sale all in the six weeks it is produced. Do not be in a hurry to sell your extracted honey. Demand will certainly be much better in the fall and prices need not be lower. In fact, they may be somewhat higher as soon as the timid ones who seem to be afraid it will evaporate or fly away, have sold out.

Remember that extracted honey will keep— and **keep it.**—Texas Honey Producers' Bulletin.

### An Interesting Experiment

A letter from C. G. Golding, of Hankow, China, conveys the information that a queen mailed from California by P. C. Chadwick, reached China alive after spending 47 days in the mails. This is perhaps a record for safe arrival after long confinement. In most cases queens mailed from Europe to America have been dead on arrival the past summer, although the time spent in the mails has been much shorter.

### Maine Holds Summer Meetings

Three summer meetings were held in Maine during the month of August. The first was at Portland on the 15th, the next at Lewiston on the 16th, and the last at Bangor on the 17th. The President, Lester W. Longfellow, and Secretary F. L. Mason, and Frank C. Pellett, spoke at all three of these meetings. At Portland, State Horticulturist Frank H. Dudley gave an address outlining the policy of his department to lend all possible aid in extending the work of the beekeepers' organization. Dr. Talbot gave an interesting account of his experience with bee-stings as a cure for gout. A local physician then outlined his methods of beekeeping in the city. At Lewiston Mr. Malloon talked on beekeeping along with farming.

The Maine Association was only organized last February, and the interest in this first series of summer meetings augurs well for the future success of the organization.

### The New York Summer Series

The beekeepers of New York State held a series of meetings during the summer. The Western New York Honey Producers' picnic at LaSalle, on July 30, was attended by about 150 enthusiastic beekeepers. The apiary of Edwin DeVentier furnished an ideal place for the meeting. In addition to the usual program of addresses much time was taken up in discussion of the honey crop, prices and markets.

The State meeting was held at the Alexander apiary at Delanson, on August 5. There was a large attendance and an extended program. Allen Latham, of Connecticut, was the principal speaker. Much interest was manifested in the apiary, which is so well known to beekeepers everywhere.

The Northern New York Honey Producers met at Campbell's Point, near Sacket's Harbor, on August 11. Here again there was an attendance of about 150 persons, with a full program and a lively discussion.

In addition to the above principal meetings there were a number of county picnics, some of which were well attended in spite of heavy rains, which made it necessary to carry out the programs within doors. The associate editor of this Journal greatly enjoyed the opportunity to accompany George H. Rea, beekeeping specialist of New York College of Agriculture around the circle of this series.

### New Hampshire Meeting

The New Hampshire beekeepers had a very successful meeting at the Agricultural College at Durham, on August 17 and 18. Allen Latham, of Connecticut, was the principal speaker on the first day and greatly interested his audience with a demonstration of requeening, along with a discussion of the subject of queen rearing and introduction.

On the second day Frank C. Pellett spoke on the subject of "Locality," discussing the factors that influence the honey flow.

### League Notes

Announcement was made in last month's papers that the League had ready for distribution the notices offering a reward for the arrest and conviction of anyone disturbing the apiary at which this notice was placed. Quite a number of the League members have taken advantage of this, but it is desired that more members secure these cards. Any beekeeper belonging to an association affiliated with the League in any manner has the right to the use of these notices and can secure them at the cost of printing from the Secretary.

The first of the series of the League advertisements appeared in the September number of "Good Housekeeping." It will be found on page 141. It is, of course, hard to estimate the value of an advertisement, but if the ad sells honey in proportion to the requests that it is bringing for the recipe booklet, it is going to be a great success. The Secretary is receiving large numbers of these requests, coming from every part of the United States. This advertising is being backed up by a circular of information to the wholesale grocers of the United States and by reading articles on the use of honey and concerning honeybees in the principal home magazines.

The Legal Department of the League has been extremely successful in helping out a considerable number of our beekeepers who were unfortunate enough to live in cities and villages where moves were made to pass ordinances prohibiting the keeping of bees. Letters from the Secretary, the Legal Advisor and other men prominent in the League were written in every case reported, and in a number of instances the Secretary was notified that all legal proceedings had been abandoned on account of the information sent by the League.

Prof. H. F. Wilson, of the Schedule Committee, has just completed arrangements whereby the majority of the speakers visiting State Beekeepers' Associations have agreed to make only those Associations which take the dates appointed by the League Schedule. While this seems to be somewhat of a radical move, it is for the best to all concerned, as it makes the travel and expense of the speakers much less and enables the States to secure speakers whom they get not otherwise interested in their meetings. It is to be hoped before another year passes that there can be added to the schedule the names of the members who will make the territories indicated on the schedule.

The Kansas Honey Producers' League has completed its affiliation with the American League. The Kansas League is composed of a small number of men who are very active and progressive in beekeeping affairs, and their guiding spirit is the League's well-known friend, Dr. J. H. Merrill.

The Secretary of the League and the advertising manager are supplying every magazine or paper that will appreciate them, articles on the use of honey, and any magazine which would like one or more of these articles can obtain them by application to the Secretary. These articles are written in popular style and contain no advertising material whatever and make a welcomed variation to the ordinary recipe article.

The Bureau of Markets of the United States Department of Agriculture already sees the value of the American Honey Producers' League. In the August 20th number of the Market Reporter occurs the following paragraph:

'The American Honey Producers' League, which is a super organization of the beekeepers' associations of the country, has outlined plans for an increased advertising program during the fall and winter, and considering the fruit shortage, honey may move at better prices by winter."

The peculiar financial condition of the country and the fact that the total honey crop will be small this year, works a hardship on the beekeepers, but it is one of the factors which are going to help the League to its rightful position. If the League had the support of every beekeeper in the United States, the League would be able to advance money on honey deposited in warehouses so such a thing as 4 to 8 cent honey would be unknown. The success of other co-operative associations shows that this can be accomplished.

H. B. Parks, Secretary.

### Pollen-Clogged Combs

Some time ago an article appeared in the Journal explaining how pollen-clogged combs could be scraped part way down to the mid rib, and returned to the bees, during a honey flow, and taken from them again in a few days, cleaned up in good shape. This article was written by Elvin M. Cole, of Audubon, Iowa, and I believe the plan is original with him, and should be impressed upon the minds of beekeepers, as thousands of good worker combs can be saved by using the method described by Mr. Cole. I had about eighty pollen-clogged combs carried over from last year, which were treated by Mr. Cole's method, and all of them are good worker combs today. Two of these combs were placed in the center of the broodnest of two different colonies, after the cells had been broken down and the pollen disarranged, and 72 hours later they were practically cleaned of pollen and drawn to their natural size again, with both queens laying in the treated combs.

J. G. Prosser,  
Ft. Dodge, Iowa.

### Illinois-Wisconsin Meet

The annual meeting of the Northern Illinois and Southern Wisconsin Beekeepers' Association will be held in Memorial Hall, Rockford, Ill., on Tuesday, October 18, 1921. We would be pleased to have samples of comb and extracted honey, also anything new in line of bee supplies.

B. Kennedy, Secretary.

### Hubam Annual Sweet Clover

Last February I bought 4 ounces of the new Hubam annual sweet clover seed at $1.50. On April 2 I planted the seed in drill rows 35 inches apart and it made 5 rows 75 feet long, but I got it too thick and could easily have gotten 10 rows from the 4 ounces of seed.

It started to bloom on July 2, and is 3 to 5½ feet high and is full of bees from daylight till dark, and some of the seed will do to pick the last of this coming week.

I have this patch on sandy soil, such as is suitable for melons, sweet potatoes, and rye, and I never saw its equal. I expect to get at least 10 pounds of seed from the 5 rows, and I honestly believe that this new clover will verily make this old U. S. A. a land flowing with milk and honey.

I expect to seed one acre in drill rows next spring and try and not get it so thick as this year.

Up to June 15 this year was the worst I ever experienced, and I fed 170 colonies 3,500 pounds of sugar, but they have made a living and stored about 25 to 30 pounds of surplus honey per colony since June 15, and prospects are real good for a fall flow, and heartsease is starting to bloom now, August, 1921.

Fred H. May, Meredosia, Ill.

### Bees at Wisconsin University

The beekeeping work is now thoroughly organized at the Wisconsin State University. A full two-year course and a full four-year course in beekeeping will be offered. Prof. H. F. Wilson is in charge of the work, with V. G. Milum as apiarist. L. P. Whitehead will devote his full time to extension work in beekeeping.

### Hambleton to Washington

J. I. Hambleton has recently resigned his position in the University of Wisconsin to accept a position as assistant apiculturist in the U. S. Department of Agriculture.

### The Large Hives are Producers

My white clover crop is about in. My old Dadant hives are the ones that did the big business, as you predicted. I have taken 170 pounds of extracted from my best and 160 pounds from the next. Besides, 30 new combs were drawn in the first, and 13 extracting and 3 brood combs were drawn in the other. Our location is not the best, and the results this year are good.

Elmer T. Beach,
Kalamazoo, Mich.

### Profit in Beekeeping

A 24-page booklet with the above title has just been issued by the G. B. Lewis Company. It is intended primarily for the beginning beekeeper, to give him ideas as to the proper way to begin beekeeping to insure the most satisfactory results. The booklet sells for 10 cents.

### Second Crop Dandelion

There is a large crop of Dandelion in bloom in this vicinity at this time (August 15), and the bees are visiting it, for both nectar and pollen. It is, I believe, the first time that a second crop of this plant has ever been known in this State.

A. F. Bonney, Iowa.

### Honey Week in Georgia

According to Georgia newspapers, the Governor of that State has been asked to designate the week of November 6 to 12 as honey week. During that time it is proposed to conduct a state-wide campaign to advertise honey and to make sure that it is offered at every hotel, restaurant and grocery store in Georgia.

### Cuba Objects to Tariff

A press dispatch states that a representative of the Cuban government has filed a special objection to the proposed tariff on honey provided by the Fordney bill now under consideration in Congress. Other items objected to are the tariffs on sugar, leaf tobacco and pineapples.

### Montana Bee Inspector

B. J. Kleinhesselink, of Hardin, has been appointed State Bee Inspector of Montana. The newly appointed officer is a well-known beekeeper of long experience.

### Minneapolis Also

Newspaper reports indicate that the city of Minneapolis is one of the latest to make the attempt to banish bees. It is proposed to pass an ordinance to prohibit the keeping of bees within certain districts.

### New Man for Massachusetts

The beekeeping work at the Massachusetts College of Agriculture has recently been resumed with Norman Phillips in charge. The course in beekeeping has been suspended for some time past, since the resignation of Dr. Burton N. Gates, who was in charge for a number of years.

### Bees Take Possession

Some amusing incidents as a result of stray swarms of bees are going the rounds of the press. In one case a lady returned home to find that a swarm had taken possession of her cellar. First she called the police, but they decided that there was nothing they could do to assist her. Her next move was to demand assistance from the Board of Health, with similar results.

At another place a swarm has taken possession of the school house and the authorities are much worried about the possibilities, since when it was time for school to convene there seemed to be no way to rid the premises of the bees.

Perhaps the most unusual is the case where a large tree fell across the road. Within the hollow of the tree was a swarm of bees. When the tree fell it was broken open and the honey scattered about. The road was soon swarming with bees to such an extent that it became necessary to close the road and warn travelers to detour by another way.

### Killed by Sting

L. E. Arensen, a mail carrier at Grandview, Washington, was stung by a bee while on his route and died within twenty minutes. He was unconscious when the doctor reached him and could not be revived.

### Toledo Next

Now comes the report that Toledo Ohio, has under consideration an ordinance which will make it unlawful to keep bees, cows, ducks or geese within the limits of that city, without a permit from the Board of Health. It seems to be a popular pastime for city aldermen to legislate against the bees.

### A Strange Case

A Milwaukee paper says that "The honey crop is hindered by the nectar flow." What do you think of that?

## TRANSFER OF EGGS BY BEES

It would seem that repeated, well-authenticated instances should in due time establish a precedent or a fact. Also, here is an instance where "it was the unexpected that happened."

On last Saturday (April 2), I discovered a colony to be hopelessly queenless. I had previously seen the queen on one of those unseasonably warm days about two weeks before. However, the queen had been gone long enough that there was positively no brood in the hive, nor eggs; so, in order to forestall laying workers, and keep the bees contented, I gave a frame of brood and eggs from another colony. Three or four days later I looked in and found two rather small queen-cells (joined) started on the comb facing the comb of brood—and in one of the cells **there was an egg!** There was no jelly about the egg, nor in the cell. The egg could not have been in the cell any length of time, judging by all appearances.

So here is a plain case where **the bees must have transferred an egg** as there is certainly no other explanation for the presence of the egg in that cell cup, the cell cup having just been built from "whole cloth" upon a comb which had been in the hive all winter, and having just prior to this occurrence, no sign of brood or eggs in it.

The bees, having unquestionably transferred an egg in this instance, it is reasonable and proper to believe that bees have done the same thing before, and are likely to do the same thing again.

As previously stated, the frame of brood was given solely to forestall laying workers, and to keep the bees contented; it is too early to think of getting a queen fertilized, or even of raising a respectable queen. There are no drones ready, as yet, to fly.

By the time a queen may be hatched, the season will be further advanced, and I shall hope the weather may be more favorable and dependable—and it may be possible then to find a queen cell in some other hive, to be transferred to this colony for another chance. The present price for a queen at this date is prohibitive.

D. Queen.
New Jersey.

(We have seen instances similar to this. But in each case, the egg thus apparently transported turned out to be a drone which died in the queen-cell, as happens when they try to rear a queen from a drone egg. The explanation of this happening is to be found in Wagner's "Dzierzon Theory," published on page 5 of the first volume of the American Bee Journal, January, 1861. Mr. Wagner wrote:

"So long as a fertile queen is present in the hive, the bees do not tolerate a fertile worker. Nor do they tolerate one while cherishing a hope of being able to rear a queen. In rare instances, however, exceptional cases occur. Fertile workers are sometimes found in hives, immediately after the death of the queen; and even in the presence of a young queen, so long as she has not herself become fertile."

It is true that, in the instance of which we speak, the bees had been broodless, and that they surely ought to have had some brood there, if a fertile worker was there. But there appears to be a tendency, on the part of some workers, to lay a few eggs at the time when their comrades are making efforts to build queen-cells. Instances of workers laying a few eggs, at the time of queen-rearing, in a queenless colony, are perhaps more frequent than is generally believed. The main argument in favor of the famous Dickel theory, which held that bees could change the sex of the larvæ, by the change of food, was based upon the fact that sometimes drones are reared around a queen-cell, when that cell has been built by tearing down some worker cells containing young brood. These drone eggs are undoubtedly due to some over-zealous worker which finds herself able to lay an egg or two, and thinks she may help matters along by so doing.

Later information from our friend above is to the effect that the egg in that cell has disappeared and that well formed and sealed queen-cells are on the brood-comb furnished by him. This is in the line of our expectations in this occurrence.—Ed.)

### SOME APIARY NOTES

The usual plan of uniting with a weak colony set on top of a strong one, with a newspaper between, proved a failure with me. About a quart of the bees were found dead outside before I discovered my misplaced confidence and reversed the chambers with a wire screen between them over night. The stronger colony confined up stairs soon loses its fighting instinct and the weaker colony on a strange stand likewise. This is the nearest 100 per cent method which I have tried.

#### Robbing

To stop robbing, coal oil is the surest remedy I have found. Just smear it all over the cracks they try to enter and reduce the entrance to a small space. The oil should be smeared on both sides and above the entrance as well as alighting board and entrance blocks. The robbers soon forget what they came after. So far this has been 100 per cent successful with me.

#### Large Hives

My experience with the large hives as compared to the standard is decidedly in favor of the Dadant or Jumbo depth, and ten-frame width. I only use 8 frames in a ten-frame super, which gives thicker combs with less uncapping.

N. A. Clay, Oberlin, Ohio.

### New Hampshire

The New Hampshire Extension Service publishes Bulletin No. 15 on "Beekeeping for New Hampshire," written by Wm. H. Wolff. It is a 16-page Bulletin giving excellent elementary information on the subject, with several good cuts. Address the New Hampshire College of Agriculture.

### Connecticut Bees Registered

Attention has recently been called to the fact that Connecticut has a provision which requires every owner of bees to apply to the town clerk for a certificate of registration. A fee of 25 cents is required for registration. A fine is provided for those who neglect to take out the required license.

### Bees Cause Wreck

Several accidents of similar nature have been reported from different sections. In each case the driver of an automobile has been stung or frightened by a bee, with the result that the machine has gone into the ditch. While the details are varied somewhat according to circumstances, the newspaper reports of those accidents are very much alike.

### A Progressive Illinois County

Henry County, Illinois, is leading the way in organization in Illinois counties. Field meetings were held in June and September and they expect to supplement these with indoor meetings during the winter.

### York Honey Store

Our readers who knew George W. York in years past will be interested in hearing that he has returned to the business of packing and selling honey. A store has been opened at 30 West Main Ave., Spokane, and the business will be conducted under the name of York Honey Company.

### Hawaii Wants Honey Plants

A Hawaiian enthusiast recently visited California to secure some of the more important honey plants, including sage, for introduction into the Islands. There are some very large apiaries there and some of the more important sources upon which the beekeepers now depend have been introduced from the mainland.

### Honey in a Thresher

A newspaper clipping states that Zena Briggs, of Hancock, Iowa, found his threshing machine occupied by a big swarm of bees when he prepared to get ready to open the last threshing season. Briggs took more than 600 pounds of honey from the machine, according to the newspaper story, and so gummed the outfit up with honey and wax that he found it difficult to get it ready for operation.

### Worker Mates With Drone

H. O. Hutton, of Arlington, Wash., reports that on one occasion he observed a worker bee mating with a drone and enquires whether this has often been known. He states that he examined the insects carefully so that no mistake was made. He is familiar with the fact that occasionally queens are very small, but in this instance the female was plainly a worker bee.

This is certainly not a common occurrence, and we will be glad to hear from any of our readers who have made a similar observation.

### The Honey Book

The Texas Honey Producers' Association has issued an attractive little book of recipes with title "The Honey Book." It contains 32 pages and cover and is designed to suggest numerous ways in which the housewife can utilize honey for her table. H. B. Parks had its preparation in charge and we anticipate that it will prove to be a piece of effective advertising for the Association.

### A New Way to Dislodge the Bees

A painter at Peekskill, N. Y., recently found a colony of bees in the cornice of the roof. In an effort to dislodge them he applied a torch to the crevice which served as a flight hole, and set the house on fire. Prompt arrival of the fire department saved the building from destruction. Since we frequently receive letters asking how bees can be removed from houses we pass on the New York plan—burn the house.

### More Spray Poisoning

For some time beekeepers have been complaining of the loss of bees through the spraying of fruit trees. Now complaints are beginning to be heard from the South, where cotton fields are sprayed in an attempt to control the boll weevil. Where calcium arsenate has been dusted on the plants as recommended by the U. S. Department of Agriculture, no damage seems to have been done to the bees, but where the liquid sprays have been used the bees are reported killed in large numbers.

### A Remedy for Bee Stings

If you are stung on the hand, at once put the place to your mouth and suck it vigorously, at the same time scraping it with your teeth. You can often suck out enough of the poison to taste it distinctly, but it is perfectly harmless in the mouth, though, of course, you would prefer to spit it out. With so much of the poison removed, the result of the sting is bound to be that much less.

Of course, if you are stung on the face, you cannot apply this remedy, but if you have a companion with you he will do it for you, especially if you are a pretty girl and he is sufficiently chivalrous. Dr. A. A. Ames,

Missouri.

### Harrison County Association

The beekeepers of Harrison County have been recently organized, the Association having held its midsummer meeting and picnic at the large apiary of George Young, near Woodbine. F. B. Paddock, of Ames, State Apiarist; M. H. Pelton, of Woodbine; Mrs. Marvin, of Logan, and C. R. Smith, spoke. County Agent C. R. Fritzsche was in charge. While the social phase of this meeting was worth all our effort, the value of instruction received could hardly be estimated. C. R. Smith,

Secretary-Treasurer.

### Hard Luck

"Sweetenin' " sometimes comes hard in Missouri. Says the Greenfield Vendette: "Uncle Jim Morris reports that one day last week, at noon, while he had his shoes off and was resting his feet, a swarm of bees came along. He never took time to put his shoes back on, but just grabbed the good wife's washtub and a plow handle and took after them, making as fine music as a bee ever heard. After running them about a mile and knocking a toenail off, he treed them in a big oak tree. He says it took him two hours in the hot sun to cut the tree and get the hive—and then the dadgum things came out the next day and left. He says honey is not very good this year anyway."—Kansas City Times.

### Bologna Association

A beekeepers' association has lately been organized in the Province of Bologna, Italy, under the name of "Associazione Provinciale Apicultori Bolognesi." One of the most important purposes of this organization is "to regulate the work of the individual apiaries for the preservation of the purity of the Italian bee, its improvement and its defense against the propagation of contagious diseases." Bolongna is in the heart of Italy and has very fine bees.

## CLASSIFIED DEPARTMENT

Advertisements in this department will be inserted for 5 cents per word, with no discounts. No classified advertisements accepted for less that 35 cents. Count each initial or number as one word.

Copy for this department must reach us not later than the 20th of each month preceding date of issue. If intended for classified department it should be so stated when advertisement is sent.

## BEES AND QUEENS

ATWATER HONEY—Supply your customers.

FOR SALE—Black bees—Three pounds, $5.00, parcel post prepaid. Add price of queen wanted. Pure black queens, 60c each; hybrid 40c; tested Italian, $1.25. Safe delivery guaranteed. One-fourth down. Write me.
Carl L. Wilson Apiaries, Mount Vernon, Ga.

BEES in 2-pound packages, our specialty for 1922. Now booking orders See ad elsewhere for prices. Caney Valley Apiaries
J. D. Yancey, Mgr., Bay City, Texas.

QUEENS OF QUALITY for 1922—3-banded Italians only After April 15, untested, $1.25; tested, $2. Satisfaction guaranteed.
P. M. Williams, Ft. Deposit, Ala.

WE are now booking orders for spring delivery of our queens and package bees. Write us for prices. Graydon Bros.,
Rt. 4, Greenville, Ala.

1922 PACKAGE BEES and QUEENS—Untested and day-old, in Thompson safety introducing cages. Discounts on early advance orders. James McKee, Riverside, Cal.

QUEENS, package bees and nuclei. Begin shipping March 15, 1922. Circulars free. Booking orders now.
Dr. White Bee Co., Sandia, Texas.

FOR SALE—300 colonies bees in 8-frame hives; also a lot of supers, combs, and bee shipping cages. Locations go with bees if wanted. Priced right.
C. H. Cobb, Belleville, Ark.

SELECT QUEENS—Choice three-band Italians, tested, $2.50; untested, $1.25. Also a few Carniolans, same price.
Geo. W. Coltrin & Son, Mathis, Texas.

WILL SELL 100 colonies bees with the best location in the State; equipped for extracting. This is one of the very best apiaries to be found; no queen over two month. old; all Italian queens; 100 queen mating hives go with apiary if wanted. This is a fine location for a queen breeder and package man to locate. This outfit is not for sale cheap, but will sell for what it is worth. If you don't want to pay for price for a good thing, do not answer this ad.
J. B. Douglas, Rt. 2, Box 209, Tucson, Ariz.

FOR SALE—30 colonies Italian bees, new 10-frame hives, wired; full sheet foundation, in lots to suit, $10 each.
Henry C. Klaffenbach, Muscatine, Iowa.

I AM BOOKING ORDERS for 1922 package bees; 2-lb packages, $3.75, no queen. No disease. Send order with 10 per cent.
D. W. Howell, Shellman, Ga.

FOR SALE—200 colonies of bees in 10-frame double-walled hives; 400 supers, extracting combs, extractor, etc; a real bargain, and one of the best kept apiaries in the State. Everything in first-class shape. Must all be sold in one bunch.
G. H. Creech, Central City, Neb.

FOR SPRING DELIVERY, 1922—One vigorous Italian queen, one frame emerging brood, one pound bees. Price, complete, f. o. b. Bordelonville, $5. Additional frames of brood, each $1; additional pounds of bees, each $1. Queen introduced and laying enroute to you. Safe delivery and satisfaction guaranteed. No disease. Reference given. Orders booked one-fifth down, May delivery. Send for addresses of satisfied customers.
Jes Dalton, Bordelonville, La.

SWARTS' golden queens produce golden bees of highest quality. Untested, $1.25 each; 6 for $7; tested $3. Satisfaction guaranteed.
D. L. Swarts, Lancaster, Ohio. Rt. 2.

ACHORD'S ITALIAN QUEENS are just a bit better than the best of the rest. We can send them by return mail. Three-banded Italians only. Large, vigorous, gentle. Guaranteed to give you satisfaction. Untested, $1 each; 6, $5.50; 12, $10.50; 25, $20; 50, $38. Tested queens, $1.75 each.
W. D. Achord, Fitzpatrick, Ala.

BEES—100 colonies for sale.
E. F. Atwater, Meridian, Idaho.

FOR SALE—50 colonies bees in 8-frame, 3-story hives; also 50 colonies in 10-frame hives; will sell all or part.
James A. Dillon, Box 15, Thornton, Calif.

SPECIAL FOR OCTOBER, ITALIAN BEES $1 a pound. Write for terms and particulars. May delivery. Satisfaction and safe arrival guaranteed; also booking orders for nuclei. Select leather queens, October, 90c
Tupelo Honey Co., Columbia, Ala.

NUCLEI fo 1922 delivery—3-frame black or hybrid bees, Italian queen, $5; 3-frame Italian bees and queen, $5.50; 3-frame black bees and queen, $4; 3 lbs. black bees and Italian queen on comb of honey, $5.50. Cypress hives complete:, five 10-frame, $12. Full depth supers complete, five 10-frame, $7. Prices on other sizes upon request. I own the timber and manufacture the hives, with no middlemen involved. Book orders now, so you can name shipping date to suit yourself. One-third with order to guarantee acceptance. Reference: Toombs County Bank, Lyons, Ga. Good farm for sale cheap.; 660 acres. Terms to suit purchaser.
Otto Diestel, Elza, Ga.

FOR SALE—400 stands clean bees, extracting equipment; good location; for eason write. The Oregon Apiary Co.,
Nyssa, Oregon.

WE BELIEVE we have the best Italian queens obtainable. Our new system is working wonders. Untested, $1.25; tested, $2.25; virgins, 50c. Am booking orders for 1922.
F. M. Russell, Roxbury, Ohio.

FOR SALE—Three-banded Italian queens, untested, $1.25 each; 6, $7.50; 12, $14. Tested queens, $2.50 each; 6, $15. The above queens are select stock. Safe arrival and satisfaction guaranteed.
Rob't B. Spicer, Wharton, N. J.

HARDY ITALIAN QUEENS, $1 each.
W. G. Lauver, Middletown, Pa.

FOR SALE—Hardy northern bred Italian queens and bees, each and every queen warranted satisfactory. For prices and further information write for circular.
H. G. Quirin, Bellevue, Ohio.

BEES AND QUEENS from my Carolina apiaries, progeny of my famous Porto Rican pedigreed breeding stock.
Elton Warner, Asheville, N. C.

FOR SALE—Leather colored Italian queens, tested, until June 1, $2.50; after, $2. Untested, $1.25; 12, $13. Root's goods at Root's prices. A. W. Yates,
15 Chapman St., Hartford, Conn.

FOR SALE—Root's strain of golden and leather-colored Italian queens; bees by the pound and nuclei. Untested queens, $1.50 each; select untested, $2 each; tested, $2.50 each; select tested, $3 each. For larger lots write. Circular free. A. J. Pinard,
440 N. 6th St., San Jose, Calif.

WE are booking orders for our golden Italian queens for spring delivery after April 15. Untested queens, 1, $1.50; doz., $15; select untested queens, 1, $1.75; doz., $18; virgin queens, 1, 75c; doz., $9; tested queens, 1, $3; doz., $36. Safe arrival guaranteed.
Tillery Brothers, Georgiana, Ala.

BOOK YOUR ORDERS for QUEENS now—Goldens, $2; tested, $3; banded, $1.50; tested $2.50; six or more, 10 per cent less.
Clover Leaf Apiaries, Wahoo, Neb.

BEES AND QUEENS from my New Jersey apiary. J. H. M. Cook,
1Atf 84 Cortland St., New York City.

FOR SALE—Golden Italian queens, untested, 1, $1.25; 6 $7.
E. A. Simmons, Greenville, Ala.

FOR SALE—Burleson's three-banded Italian queens. The kind of bees that get the goods. Guaranteed to please or money back. For balance of season as follows: 1 select untested queen, $1.25, 6 for $7, 12 for $13.50, 100 or more $1 each. Send all orders, together with remittance, to J. W. Seay, manager, Mathis, Texas.
T. W. Burleson, Waxahachie, Texas.

WANTED—We have many calls from educators for copies to complete their files of the older Bee Journals. If you have complete volumes or miscellaneous numbers of any Bee Journals previous to 1900, write us, giving a list, and we will be glad to quote a price. Old bee books, now out of print, are also desirable. We act as a clearing house for this kind of materials.
American Bee Journal, Hamilton, Ill.

BEES BY THE POUND, ALSO QUEENS—Booking orders now. Free circular gives prices, etc. See larger ad elsewhere.
Nueces County Apiaries, Calallen, Texas,
E. B. Ault, Prop.

WE are now equipped to handle your early spring orders for package bees and queens, especially bred for the production of honey. Our queens are bred from the best stock obtainable, and will give satisfaction. Safe arrival guaranteed. Write for prices and terms.
Sarasota Bee Co., Sarasota, Fla.

CALIFORNIA ITALIAN QUEENS at special prices. After June 15 and to October 1, 1, $1.25; 6, $7; 12, $13; 25 and over, $1 each; 100, $90. See larger ad elsewhere. Circular free.
J. E. Wing, 155 Schiele Ave., San Jose, Cal.

NUCLEI—We make a specialty of shipping 2-frame nuclei. Write for special prices for June delivery. Queens at the following prices: Untested, $1.50 each; 6, $8; 12, $15; 50, $60; 100, $100. Tested queens, $2.50 each.
Cotton Belt Apiaries, Roxton, Texas.

LARGE, HARDY, PROLIFIC QUEENS—Three-band Italians and goldens, pure mating and safe arrival guaranteed. We ship only queens that are top notchers in size, prolificness and color. After June 1, untested queens $1.50 each, 6 for $8, 12 or more $1.40 each, 25 or more $1.25 each. Tested queens $3 each, 6 for $16.
Buckeye Bee Co., Justus, O.

## SWEET CLOVER SEED

FOR SALE—A limited quantity of my crop of Giant Annual white sweet clover seed of the Hughes variety. This seed was all produced under cultivation. References and prices furnished upon application. Get your supply before I am all sold out
Edw. A. Winkler, Joliet, Ill., Rt. 1.

## HONEY AND BEESWAX

ATWATER HONEY—Supply your customers.

FOR SALE—New crop choice clover extracted honey, packed in *new* cans and cases, at $14.85 per case of two 60-lb. cans. A few cases of last year's clover honey at 10c. Write for price on ten or more cases of new honey.
J. D. Beals, Oto, Iowa.

MR. BOTTLER, supply your trade with the best, several tons finest extracted honey ready to ship at your command.
Bee-dell Apiaries, Earlville, N. Y.

FOR SALE—Twelve cases of off-grade extracted honey. Fine for baking; $10 per case of two 60-lb. cans Sample 20c.
J. D. Beals, Oto, Iowa.

FOR SALE—Extra fancy white clover honey, well ripened and put up in new cans, 60-lbs net; per case of two cans, $16. Write for special price on larger quantities.
Edw. A. Winkler, Rt. 1, Joliet, Ill.

FOR SALE—Extra fine white clover honey, in new 60-lb. cans, two to the case, at $15, f. o. b. Ruthven, Iowa.
Martin Carsmoe.

FOR SALE—Amber honey in 60-lb. cans.
P. W. Sowinski, Bellaire, Mich.

FOR SALE—Finest clover honey, packed in new 60-lb. cans and 5-lb pails. Sample 15c.
A. C. Ames, Weston, Ohio.

QUICK CASH for comb and extracted.
Bruner, 3836 N. Kostner Ave., Chicago, Ill.

HONEY—SUPPLY YOUR CUSTOMERS—Finest alfalfa-clover honey, extra strong cases, case of two 5-gal. cans, $12; case of six 10-lb. pails, $7.20; case of twelve 5-lb. pails, $7.80, all f. o. b. here.
E. F. Atwater, Meridian, Idaho.

FOR SALE—No. 1 white comb, $6 per case; No. 2 white comb, $5 per case of 24 sections; six cases to carrier. Clover extracted, in two 60-lb. cans to case, 15c per pound; 5-lb. pails, $1 each, 12 to case. Amber baking honey, two sixty-lb. cans to case, 10c per pound; same honey in 50-gallon barrels, 8c.
H. G. Quirin, Bellevue, Ohio.

EXTRA FINE white sweet clover honey, new crop, in 5-gallon cans, cases of 2 cans, $15; 1 can, $8. Write for prices on a ton or a car load. Sample 10c. C. S. Engle,
200 Center St., Sioux City, Iowa.

FOR SALE—New crop sweet clover honey in 5-lb. pails, 12 to case, 15c per lb.; 60-lb. cans. two to case, 12½c per lb.
J. P. Goodwin, South Sioux City, Neb

FOR SALE—Extra choice extracted white clover honey, put up in 60-lb. cans and 5-lb. lithographed pails. Sample 20c, same to apply on first order.
E. J. Stahlman, Grover Hill, Ohio.

FOR SALE—Extra fine Michigan white clover and basswood honey. Almost water white; indeed, I doubt if the color, body and flavor can be beaten. Put up in 60-lb. cans, 2 to the case, at 15c per pound, or in 5-pound pails, 50 to the barrel, at 17c per pound. Sample 15c.
O. H. Schmidt, Rt. 5, Bay City, Mich.

HONEY FOR SALE—In 60-lb. tins, water white orange, 14c; water white sweet clover, 12c; extra light amber sage, 11c; New York State buckwheat, 10c, for immediate shipment, from New York. Hoffman & Hauck, Inc.
Woodhaven N. Y

FOR SALE—Finest Michigan raspberry, basswood and clover No. 2 white comb, $5.50 per case; No. 1, $6; fancy, $6.50; extra fancy, $7. 24 Danz. sections to case. Extracted, 60-lb. cans 15c per lb. W. A. Latshaw, Clarion, Mich.

FOR SALE—Extracted honey. Write for prices. A. L. Kildow, Putnam, Ill.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendering. Fred W. Muth Co.,
204 Walnut St., Cincinnati. Ohio.

**Extracted and comb honey wanted.**
**Quote lowest price and how packed.**

**P. H. OUTZEN**
**White Bear Lake, Minn.**

HONEY WANTED—Give particulars in first letter. Elton Warner, Asheville. N. C.

## SUPPLIES

ATWATER HONEY—Supply your customers.

FOR SALE—Western beehives, standard sizes, manufactured from red cedar and white pine; odd sizes made to order. Williams Bros.,
5125 82nd St., S. E. Portland, Ore.

WESTERN BEEKEEPERS—We can demonstrate that you can save money on buying bee supplies of best quality. Write for our latest price list.
The Colorado Honey Producers' Association,
Denver, Colo.

HAVE YOU any Bee Journals or bee books published previous to 1900 you wish to dispose of? If so send us a list.
American Bee Journal, Hamilton, Ill.

## FOR SALE

ATWATER HONEY—Supply your customers.

FOR SALE 20 colonies Italian bees, 1 Cowan reversible extractor, 200 quarts clover honey. Bargain for a quick sale. Write for particulars. D. Milligan,
603 Cambridge St., Kewanee, Ill.

FOR SALE—Back numbers of Gleanings 13 years, Journal 2 years, Miller's Thousand Questions, Hutchinson's Adv. Bee Culture, Alley traps, 10-frame 7-wire excluders. Write for bargain prices.
W. H. Keller, Emporia, Kans.

FOR SALE—1½ horse power gasoline engine; first-class working condition Price $25.
Paul D. Roban, Waverly, Minn

FOR SALE—350 colonies fine strain Italian bees in first-class condition. All colonies well provided with honey. Will sell cheap. Write for particulars.
Chas. Heim & Sons, Three Rivers, Texas.

FOR SALE—40 colonies of bees in standard dovetailed hives, with wired frames. Bees healthy. Write for particulars.
Duane Shaw, Palestine, Ill.

**Southern Headquarters**

**Package Bees. Reliable Queens.**

**Three-Banded Italian Only**

We solicit your orders for 1922 shipping. We have the stock, equipment and experience necessary to give you prompt, satisfactory service. We have more than 1,000 big, healthy, hustling colonies of pure Italian bees to draw from. Write for our illustrated price list.

**W. D. ACHORD, Fitzpatrick, Ala.**

ANOTHER NEW BOOK

**BEEKEEPING IN THE SOUTH**

BY KENNITH HAWKINS

There is a great demand for a book giving detailed information relating to beekeeping conditions in the South. Kennith Hawkins, as a beekeeping specialist for the United States Department of Agriculture, visited all of the Southern States and has made a special study of the characteristics of this region. This is not a textbook of beekeeping, but rather a book of information about a great region where beekeeping offers exceptional possibilities and where there is a great variation of the climate and flora of different sections. Illustrated with many photographs. Mailing weight 1 pound. Price $1.25.

**AMERICAN BEE JOURNAL, Hamilton, Illinois**

FOR SALE—Cedar or pine dovetailed hives; also full line of supplies, including Dadant's foundation. Write for catalog.
A. E. Burdick, Sunnyside, Wash.

FOR—SALE—Hamburg chickens; rare old violin. Elias Fox, Union Center, Wis.

FOR SALE—"Superior" Foundation (Weed process). Quality and service unexcelled.
Superior Honey Co., Ogden, Utah.

## WANTED

ATWATER HONEY—Supply your customers.

WANTED—Old combs, cappings or slum gum, for rendering by steam press process. We pay cash for wax rendered, trade for supplies, or work it into foundation.
W. T. Falconer Mfg. Co., Falconer, N. Y

WANTED—To get in touch with beekeeper having pure sourwood honey.
S. D McAuley Rt. 8, Waterloo, Iowa.

WANTED, TO LEASE—150 to 200 colonies of bees. Would make contract for three or five years; good location. Will give references.
Robert Guntert,
750 N. Third St., Lawrence, Kans.

WANTED—Bees in Langstroth 10-frame or Modified Dadant hives; prefer near eastern Kansas. Phillip A. Readio,
1420 Ohio St, Lawrence, Kans.

WANTED—White clover extracted honey; send sample; state how put up, and price wanted. A. F. Lewis, Le Roy, Minn.

Wanted—First editions of the noted books on bees. Mrs. M. J. Fox,
Foxden, Peekskill, N. Y.

WANTED—Honey, section, bulk comb and extracted. W. A. Hunter, Terre Haute, Ind.

WE BUY honey and beeswax. Give us your best price, delivered in New York. On comb honey, state quantity, quality, size and weight of sections and number of sections to a case. Extracted honey, quantity, quality, how packed, and send samples.
Charles Israel Bros. Co.,
486-490 Canal St., New York City.

WANTED—Beeswax, also old combs and cappings to render on shares; will buy your share and pay the highest market price.
F. J. Rettig, Wabash, Ind.

WANTED—Beeswax, old combs and cappings for rendering on shares Also wax accepted for trade. Top market prices offered.
A. I. Root Co., Council Bluffs, Iowa.

WANTED—Your order for "Superior" Foundation. Prompt shipments at right prices.
Superior Honey Co., Ogden, Utah.

WANTED—Extracted honey. Send prices and samples. Will exchange Haywood vulcanizing outfit for honey, worth $450, with tools and equipment. Chris Babr, Catbay, N. Dak.

## SITUATIONS

ATWATER HONEY—Supply your customers.

WANTED—Housekeeping by competent widow with one son aged 10 years. Address,
Grace Larkey, Owatonna, Minn., Park Ave.

WANTED—A man who thoroughly understands the care of bees; a good job for the right party. References required. Address
R. T. Parker,
69 Appleton Ave., Pittsfield, Mass.

## MISCELLANEOUS

ATWATER HONEY—Supply your customers.

FOR SALE—40 acres cut-over land, with new house, cottage, barn, chicken house, on Maiden Lake resort. Would make good bee location. No bees. For further information write to the owner. Wolf-Kernen,
Lakewood, Wis.

GRANULATED HONEY SLIPS—Small and neat. They save complaints. Thousands are being sold; 100, 20 cents; 500, 80 cents; 1,000, $1.50. Dr. Bonney, Buck Grove, Iowa.

LEAGUE EMBLEMS—We still have a number of U. S. Beekeepers' emblems, buttons or pins, bronze or gold. Send 50 cents and get one
American Bee Journal, Hamilton, Ill.

**GOLDEN QUEENS 1921**

Golden and three-band queens, untested $1 each, or 6 for $5; $80 per 100. Virgin queens 50c each, or $40 per 100. All orders will be filled promptly, or parties notified just when to look for them. Reasonable satisfaction to everybody.

**R. O. COX, Rt. No. 4, Luverne, Ala.**

**SHE-SUITS-ME queen-bees, prices for 1921: Untested Italians, $2 each; $1.75 each for 10 or more, prior to June 15. After June 15, 1 to 9 queens $1.50 each, 10 to 24 $1.40 each, 25 and up $1.25 each.**

**ALLEN LATHAM,**
**Norwichtown, Conn.**

**WESTERN BEEKEEPERS!**

We handle the finest line of bee supplies. Send for our 68-page catalog. Our prices will interest you.

**The Colorado Honey Producers' Association, 1424 Market St.,**
**Denver, Colo.**

**Printing**

**Honey Labels**
**Stationery**
**Cards, Tags,**
**Etc.**

Everything for the Beekeeper

Order Early and get Prompt Service

New labels, new equipment, more help. We are better equipped than ever to supply all kinds of printing for the beekeeper

**American Bee Journal**
**HAMILTON, ILL.**

**FOR YOUR 1921 CROP**

Comb honey shipping cases, honey cans, friction top pails. Prices on application.

Early order cash discount on sections, hives, supers, frames, comb foundation and other goods.

Buy now and get supplies ready for 1922. Make out your list and send for our prices.

**AUGUST LOTZ COMPANY, Boyd, Wisconsin**

**IT'S HERE! WE HAVE IT!**

**QUALITY BEE SUPPLIES**

**POLISHED SHIPPING CASES**

One-piece covers and bottoms, glass and paper included, selling at cost prices, as follows:

| | |
|---|---|
| 24-lb., for 1⅞ sections, | $30 per 100 |
| 12-lb., for 1⅞ sections | $17 per 100 |

Write for illustrated catalog on our bee supplies.
We are always ready to serve you.

**CHAS. MONDENG**
**146 Newton Ave. N. and 159 Cedar Lake Rd. Minneapolis, Minn.**

**Nuclei For Sale—1922 Prices**

Book early to get the best shipping dates. Experience has taught us that the three-frame nuclei is the right size to build up for the clover flows of the North, providing you get them by May 15. I make a specialty of the three-frame size, having shipped over 1,200 with only a loss of 6 last season.

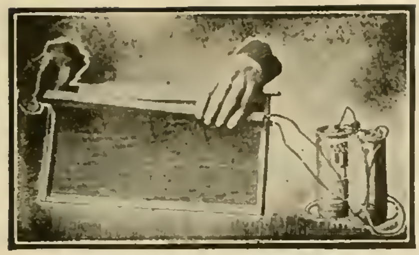
Note what one of the largest beekeepers in the North says: "I have no hesitation in recommending you as to ability to put up bees for shipment, or as to your business integrity. Of the 225 nuclei sent to date, every one came through alive and in fine condition." (Name on request.) Although we sold our nuclei at really pre-war prices last season, I am still making a further reduction.

**Price List of Our Goods**

| | |
|---|---|
| 3-frame nuclei hybrid bees, guaranteed pure Italian queen, | $5.00 each |
| 3-frame nuclei Italian bees, with Italian queen | 6.00 each |
| 3-frame nuclei black bees and black queen | 4.00 each |
| Cypress hives, complete, crate of 5 | $13.00 |
| Medium brood foundation, per lb. | .68 |

I am always buying and establishing new yards, is the reason I can sell the black bees with success. Perfect satisfaction guaranteed. Terms one-third down to guarantee acceptance.

**A. R. IRISH, Ludowici, Ga.**



ELECTRIC IMBEDDER

Price without Batteries, $1.50
Not Postpaid.

Actually cements wires in the foundation. Will work with dry cells or with city current in connection with transformer. Best device of its kind on the market.

For sale by all supply dealers.

**Dadant & Sons,** Manufacturers HAMILTON, ILL.

CHESHIRE'S "BEES AND BEEKEEPING," in two volumes, bas recently been reprinted. We offer it to our subscribers at $6 for the two volumes, postpaid.
AMERICAN BEE JOURNAL, Hamilton, Ill.

QUEENS

Write for our catalog of high grade Italian Queens. Pure mating and safe arrival guaranteed.

1 to 4 inclusive, $2 each.

5 to 9 inclusive, $1.95 each.

10 or more, $1.90 each.

Breeders, $12.00 each.

**JAY SMITH, Route 3**
VINCENNES, IND.

1922

Place your order now for 1922 delivery of

FOREHAND'S THREE-BANDS
The Thrifty Kind

They are surpassed by none, but superior to many.

Package Bees. Three-band Queens

Write for prices now.

**W. J. FOREHAND & SONS**
Fort Deposit, Ala.

MONEY SAVED IS MONEY MADE

*Why haven't you clipped this coupon?*

THAT IS WHY YOU WILL WANT TO SEND US THIS COUPON AT ONCE. WE HAVE SOME MONEY SAVING PRICES FOR YOU

The A. I. Root Co. of Iowa, Council Bluffs, Iowa

GENTLEMEN: Kindly name your special fall prices on
☐ Eight frame hives, metal cover, complete
☐ Eight frame bodies, with frames, complete
☐ Shipping cases in lots of
☐ Cans, jars and pails, also second hand 5 gal. cans
☐ Honey tanks

☐ As I am anxious to make the most of my honey production, please send me your service bulletin "Bee Topics." I am interested in your September's issue treating principally with market conditions, and your suggestions as to increasing sales. I have ____ colonies ____________ frame hives. For your further information I wish to state that

______________________________

Name ______________________________

Address ______________________________

**THE A. I. ROOT CO. OF IOWA**
COUNCIL BLUFFS, IOWA

# MR. BEEKEEPER—

We have a large plant especially equipped to manufacture the supplies that you use. We guarantee all materials and workmanship. We ship anywhere. We allow early order discounts and make prompt shipments. *Write for free illustrated catalog today*

**LEAHY MFG. CO., 90 Sixth Street, Higginsville, Missouri**

**J. W. ROUSE, Mexico, Missouri** **A. M. HUNT, Goldthwaite, Texas**

# TENNESSEE-BRED QUEENS

Forty-nine Years' Experience in Queen-Rearing
Breed Three-Band Italians Only

| | Nov. 1st to June 1st | | | June 1st to Nov. 1st | | |
|---|---|---|---|---|---|---|
| | 1 | 6 | 12 | 1 | 6 | 12 |
| Untested Queens | $2.00 | $ 9.00 | $16.80 | $1.50 | $ 8.00 | $14.50 |
| Select Untested | 2 25 | 10.50 | 18.00 | 2.00 | 9.50 | 16.00 |
| Tested | 3.50 | 20.00 | 35.00 | 2.50 | 13.00 | 25.00 |
| Select Tested | 4 00 | 22.50 | 40.00 | 3.00 | 16.00 | 30.00 |

Select tested, for breeding $7.50

The very best queen tested for breeding $15

Capacity of yard 6000. I sell no bees by the pound or nuclei except with high priced tested and breeding queens

Queens for export will be carefully packed in long distance cages, but safe delivery is not guaranteed

**JOHN M. DAVIS, Spring Hill, Tenn.**

Five colonies of your stock produced 2660 finished sections—the best one 616 finished sections
JOHN M. BIXLER, Corning, Iowa, February 1, 1921

# MAKE YOUR BEES PAY

If you want bigger honey profits, *get the best queens you can buy*. This is the secret of successful bee raisers. Hundreds of America's greatest honey producers order Forehand's 3-banded Italian Queens. Follow their example. Order from Forehand and be sure of satisfactory results. Backed by 28 years' successful experience in queen breeding and honey production. Take no chances. Experimenting is costly. So certain am I that my queens will satisfy you that I will gladly replace unsatisfactory queens delivered in the United States or Canada, or refund your money. You be the judge and jury. Can anything be fairer?

PRICES—Aug. 1 to Nov. 1.

| | 1 | 6 | 12 |
|---|---|---|---|
| Untested | $1 00 | | $10.00 |
| Select untested | 1.25 | | 12.00 |
| Tested | 2.50 | $13.00 | 24.00 |
| Select tested | 3.00 | 16.50 | 30.00 |

Bees in 2-lb. packages—1 package, $6; 25 or over, $5.80; 50 or over, $5.40; 100 or over, $5; without queens.

Place your order *now*. Prices low, quality considered. Write for circular and discounts on large orders.

**N. FOREHAND**
**RAMER, ALA.**
**Breeder of 3-banded Italian Queens exclusively**

# BEE SUPPLIES

We carry a complete stock of supplies at all times, and can make prompt shipments. Our prices will interest you.

Send Us Your Inquiries

**A. H. RUSCH & SON CO.**
Reedsville, Wis.

**Shrubs and Trees**

That provide Nectar for the Bees and Fruit for the household. No Cash with order. Get our Catalog TODAY.

**PROGRESS NURSERIES**
**1318 Peters Ave. Troy, Ohio**

# Annual White Sweet Clover Seed

(James or Alabama Strain)

Start right. Buy your seed from the home of this New Plant.

This clover was discovered growing in Alabama by our Mr. James, in 1919.

Our crop this year was harvested without rain, and we can furnish a very high grade of seed, absolutely pure, grown by us on cultivated lands.

We are offering a limited supply at $2 per pound, delivered. This will be clean, hulled, scarified seed. Germination test must please you. Write for further information as to how to grow, etc.

**F. A. James Clover Seed Co.**
**Newbern, Alabama**

QUEENS OF

# MOORE'S STRAIN OF ITALIANS

Produce Workers

That fill the supers quick
With honey nice and thick

They have won a world-wide reputation for honey-gathering, hardiness, gentleness, etc.
Untested queens, $1.50; 6, $8; 12, $15.
Select untested, $2; 6, $10; 12, $19
Safe arrival and satisfaction guaranteed.
Circular free.

I am now filling orders by return mail.

**J. P. MOORE, Queen Breeder**
Route 1 Morgan, Ky.

# HONEY

FINEST Michigan Raspberry Basswood and Clover comb and extracted honey.

| | |
|---|---|
| Crate 8 cases 24 sec. Ex. Fancy | $40.00 |
| Crate 8 cases 24 sec. Fancy comb | 36.00 |
| Crate 8 cases 24 sec. A No. 1 co'b | 32.00 |
| Crate 12 pails 5-lb., extracted | 9.60 |
| Crate 6 pails, 10-lb., extracted | 9.00 |
| Crate 2 cans, 120-lb., extracted | 12.00 |

*Send Today for Free Sample*

**W. A. LATSHAW COMPANY, Clarion, Michigan.**

## 13,019
## ITALIAN QUEENS

Reared and sold to September first this season.

Untested, 1 to 12, ------------------------$1.00 Untested, 12 or more ----------------------$ .75

For Sale—Several complete outfits, consisting of any number of colonies desired, with either comb or extracted honey equipment, which can be easily moved to Hubam Clover Section.

4,000 nuclei or 4,000 packages. Let us book your order now.

Sweet Clover Seed, $2.50 per bushel. Sow a bushel around each apiary. It will pay.

CYPRESS BEE SUPPLIES

**THE STOVER APIARIES, MAYHEW, MISSISSIPPI**

---

## We Wish to Thank Our Customers for Their Patronage and Patience During the Past Few Months

Our advertisement, August issue, page 301, brought thousands of orders. We were completely swamped. Over 6,000 queens shipped since August 1st. Increased our yards fourfold.

NOW BOOKING ORDERS 1922 SPRING DELIVERY. WRITE FOR SPECIAL PRICES, NUCLEI PACKAGES AND QUEENS

Terms: 25 per cent deposit to book order.

BEEKEEPERS' SUPPLIES

Distributors of **"Root Quality"** Bee Supplies. Lowest prices. Factory shipment to save you freight. Write for catalog and quotations.

**THE SOUTHLAND APIARIES, Box 585, Hattiesburg, Miss.**

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## HONEY CANS

Several carloads just received at our Ogden, Utah and Idaho Falls, Idaho warehouses
We also manufacture shipping cases and dovetailed beehives. Special prices
on request. "Everything in bee supplies." Prompt shipments

**SUPERIOR HONEY CO., Ogden, Utah**
**(Manufacturers of Weed Process Foundation)**

---

**HONEY** **HONEY**

## WANTED

We are in the market for both comb and extracted. Send sample of extracted, state how put up with lowest price delivered Cincinnati. Comb honey, state grade and how packed with lowest price delivered Cincinnati. We are always in the market for white honey if price is right.

**C. H. W. WEBER & CO., 2163-65-67 Central Ave., Cincinnati, O.**

**QUEENS**

# PACKAGE BEES

**FULL COLONIES AND NUCLEI**

**QUEENS**

Our bees are hustlers for honey, prolific, gentle, very resistant to European foulbrood, our customers tell us. For years we have been shipping thousands of queens and pounds of bees all over the United States and Canada. We are continually getting letters with statements such as the following: "Well pleased with your stock; best we ever had. The bees we got from you are the tops (best) out of our 225 colonies; bees arrived in fine shape; well pleased." One customer in Canada wrote he would get over 200 pounds average this year from bees bought of me last year; another wrote he would get over 90 pounds average this year from packages bought in the spring. Write for free circular giving details, etc.

We are quoting a lower price for balance of the year, but will still hold up the high standard of Quality First. I have a good proposition for two or three Northern men wanting to come South this fall. Write for particulars.

Queens after July 1st, balance of the year:

| | |
|---|---|
| Untested | $1.35 each, 25 or more $1.00 each |
| Select Untested | $1.50 each, 25 or more $1.25 each |
| Tested | $2.25 each, 25 or more $1.75 each |
| Select Tested | $2.75 each, 25 or more $2.00 each |
| Breeders | $5.00 to $15.00 |

| | |
|---|---|
| 1 pound pkg. bees, | $2.25 each; 25 or more, $2.13 each |
| 2 pound package bees | $3.75 each; 25 or more, $3.56 each |
| 3 pound pkg. bees, | $5.25 each; 25 or more, $4.98 each |

Add price of queen wanted when ordering bees. Safe arrival guaranteed within 6 days of here.

MY FREE CIRCULAR FOR 1922 SHIPPING, quoting lower prices on package bees and queens is ready to mail. Send for one before placing your order.

## NUECES COUNTY APIARIES, Calallen, Texas

**E. B. AULT, Proprietor**

# SLUM GUM AND OLD COMBS

Worked into beeswax at 5c per pound, minimum charge $1.00. Pay taken from wax.

Market price paid for the wax, worked into foundation or trade for supplies.

Working beeswax into foundation is a specialty with us.

Ship to Falconer, N. Y. Mark each package with your name and address both inside and outside.

Write for red catalog of beekeepers supplies and REDUCED price list.

**W. T. FALCONER MFG. COMPANY, Falconer, N. Y., U. S. A.**

*"Where the good Beehives come from"*

## GOLDEN ITALIAN QUEENS

| | Nov. 1 to June 1 | | | June 1 to Nov. 1 | | |
|---|---|---|---|---|---|---|
| | 1 | 6 | 12 | 1 | 6 | 12 |
| Untested | $2.00 | $ 9.00 | $16.80 | $1.50 | $ 8 00 | $14.50 |
| Select Uotested | 2.25 | 10.50 | 18.00 | 2.00 | 9.50 | 16.00 |
| Tested | 4.00 | 22.50 | 40.00 | 3.50 | 10.50 | 36.00 |
| Select Tested | 4.50 | 25.00 | 45.00 | 4.00 | 22.50 | 40.00 |

**BREEDERS $12.50 TO $25.00**

10 per cent additional for Exported Queens. Queens for Export will be carefully packed in long distance cages, but safe delivery is not guaranteed.

NO NUCLEI, FULL COLONIES OR POUND PACKAGES.

**BEN G. DAVIS, Spring Hill, Tenn.**

## BARNES' FOOTPOWER MACHINERY

Read what J. E. Parent, of Chariton, N. Y says: "We cut with one of your Combined Machines last winter 50 chaff hives with 7-in. cap, 100 honey-racks, 500 frames and a great deal of other work."

**W. F. & JOHN BARNES**
**95 Ruby St., ROCKFORD, ILLINOIS**

# Crop and Market Report

**Compiled by M. G. Dadant**

### THE CROP COMPARED TO LAST YEAR

In very few localities do the beekeepers report as large a crop of honey as last year, and this in view of the fact that 1920 was not a bumper crop year.

New England reports are far from flattering, ranging from 50 per cent of a crop to no crop at all. In New York the crop has been very spotted. We believe, however, that the amount of honey will rank well up to what it was a year ago. The Pennsylvania crop seems to be better than a year ago. New Jersey has a small crop, as have the Virginias.

The Carolinas are very short. One of the largest producers in that section reports only 10 per cent as much honey as last season. Georgia reports are conflicting, but the average would indicate that the crop was some better than a year ago, while in Florida the opposite is true. there being not more than 50 to 75 per cent of 1920.

Kentucky has a fair crop. Tennessee has little honey in the western half, with more in the eastern. Mississippi is better than in 1920, since there was a very short crop in 1920. Alabama the same. Louisiana has had a good crop, probably much in excess of 1920. In fact some beekeepers report that they have never seen honey come in so freely.

Texas started off poorly, but has recuperated her losses, only to be struck by drought in many sections as cotton was blooming. All in all, the crop will range nearly up to last season, with the best reports from the sections within 100 to 150 miles of San Antonio.

Ohio is one of the States showing the largest crop, with 25 per cent more than a year ago. Eastern and northern Indiana are almost as good. Illinois is short everywhere, as she was a year ago.

Michigan has had a good white honey crop in the southern half. Fortunately, the fall flow has materialized as never before, especially in northern Michigan, with the result that the total crop will likely reach normal.

Wisconsin will have very little honey comparatively, and most Minnesota locations do not expect more than 50 per cent of 1920.

Western and Northern Iowa are good, about 80 per cent of normal, while southern and eastern Iowa are very short. Missouri will have nearly half of 1920. South Dakota is nearly normal, but Nebraska is very short except in the Platte Valley. Kansas will be about half of 1920.

Montana is coming up to last year, thanks to the late prolonged flow. Colorado had a failure last year. The crop will not be large, but it will outrank 1920 considerably.

New Mexico and Arizona have both had near to a failure, possibly half as much honey as last year will be harvested. Idaho is also short, with less than 50 per cent of last year's crop, which was very large. Washington is about the same as Idaho.

The crop is spotted in both Nevada and Utah, but the large yield of some districts will make up for the shortcomings in others, making the total normal.

If Oregon had not been hampered by excessive losses this year through poison sprays, the crop would have been excellent. As it is, it will be 50 to 75 per cent of a year ago.

Northern California is nearly normal, but many complaints are coming from Southern California of a very short crop, some estimating it at 10 per cent of last season.

### PER COLONY AVERAGES

Ohio, Indiana, Georgia, South Dakota, Montana, California, Louisiana and Mississippi have reporters who have secured an average of 100 pounds per colony, but these are very much scattered, and are scarce. There are less reports "big crop" than for many years.

New Jersey, North Carolina, and many in California and other short States, will have to be contented with an average of 10 to 20 pounds per colony.

### PERCENTAGE OF CROP SOLD

Only a small percentage of the present honey crop has been disposed of, but in most localities it is moving at a good rate for this time of year. Texas, as usual, is selling earlier than the other States. States of small production report no difficulty in selling out early in the season.

### PRICES WHOLESALE AND RETAIL

Prices are at wide variance in different States, and even in the same localities. They seem to depend more upon the attitude of the producer than on the value of the product or the demand on the part of the public. For this reason there are some offering honey in 5-pound pails as low as 65 cents, and in 10-pound pails at $1.25. The bulk of the beekeepers, however, seem to have taken it for granted that honey would sell in a jobbing way for about 10 cents per pound, and are offering 5-pound pails at from 90 cents to $1.25 and 10-pound at from $1.90 to $2.40.

In a jobbing way, the amber honies seem to be suffering the most as to price, evidently due to the competition of foreign shipments. Some report sales of amber alfalfa and of Southern honies as low as 5½ to 6½ cents, with one or two sales even lower. A few cars of white honey moved at as low a price as 7 cents f. o. b. shipping point, but most is selling now at from 8 cents to 9 cents f. o. b. shipping point in the western territory, with a correspondingly higher price east.

### PRICES ASKED

More and more there is a tendency to hold honey rather than sell at a figure which the beekeeper feels is too low, and to make an extra effort at local sales if necessary.

It is doubtful, after the first flurry of the stampeded producer is over, whether any white honey will find its way into the markets at a less figure than 10 cents f. o. b. intermountain, which would mean nearly 2 cents more in eastern territory.

Amber honey will continue to suffer more than white. Yet a recent reported shipment of 20 carloads of West Indian honey to Germany goes to show that our markets have reached their lowest ebb and that honey will go abroad rather than be sacrificed as it has been the past spring and summer.

All indications are that the honey market is improving, and this is being borne out by the activity of buyers, who have up till recently been inclined to hold off, looking for better bargains.

Sugar still remains at fairly low levels, being in the neighborhood of 6 cents jobbing.

There are two things which would tend to make for a stiffening of the honey market. The first is a woefully short crop of fruits, and the second is that many people during their two or three years of affluence have acquired a taste for the better sweets, such as maple syrup and honey, and will be slow to return to the corn syrups even though offered them at attractive prices.

All in all the honey outlook looks anything but pessimistic to me. Like most other farm products, it went to unprecedently low levels compared to its production cost; like them, it will gradually come back into its own. We cannot again look for the prices of two years ago. We should not. But the market should improve to the point where there is remuneration for the producer.

## Special Printing Prices

| | |
|---|---|
| 500-4 page folders, 3½x6½ | $ 7.75 |
| 1000-4 page folders, 3½x6½ | 10.50 |
| Each additional 1000 | 8.50 |

Best work on fine enameled paper. Postage extra. Shipping weight 10 lbs. per 1000. Send for sample.

| | |
|---|---|
| 250 good white envelopes, 28-lb. | $1.75 |
| 500 good white envelopes, 28 lb. | 3.25 |
| 1000 good white envelopes, 28-lb. | 4.00 |

Red "Eat Honey" in lower left hand corner 20% extra. Shipping weight 10 lbs. per 1000.

**Take advantage of the special prices offered during the dull season**

**AMERICAN BEE JOURNAL, HAMILTON, ILL.**

## CALIFORNIA ITALIAN QUEENS

The old reliable three-band stock that delivers the goods. This stock is descendant from the A. I. Root Co.'s best breeders. Then the J. P. Moore long tongue, red clover strain was added. Next some of Doolittle's famous stock was secured, one breeder in particular, one which was selected by Mr. Doolittle himself and caged with nis own hands a short time before his death, proved extra remarkable. This season the Jay Smith strain has been secured, and these are proving equal, if not superior, to anything I have ever seen. In order to keep running to maximum capacity till fall, I am offering

SPECIAL PRICES FOR JUNE, JULY, AUGUST AND SEPTEMBER

Delivery June 15 to October 1, for orders booked in advance:

Select Untested ------------ ------ 1, $1.25; 6, $7.00; 12, $13.00; 25 to 50, $1 each; 100, 90c each
Tested ------------------------ 1, $1.75; 6, $10.00; 12, $18.00
Superior breeder, 1 year old, $5.00

Every queen actually laying before being caged, and fully guaranteed. I also guarantee safe arrival in United States and Canada. Circular free.

**155 SCHIELE ST.** **J. E. WING** **SAN JOSE, CAL.**

## 3-Banded Queens, Package Bees, Golden Queens

We are booking orders for 1922 delivery. Do not care to accept any more business for 1921 delivery after September 10. We wish to thank our many friends for their kind and, indeed, generous patronage during the present year, and we hope to serve them even better the coming season, 1922. Our bees and service will be better the coming year than ever before. Let us know your wants and get our lowest prices, delivered, safe arrival and satisfaction guaranteed.

**M. C. BERRY & CO.**
HAYNEVILLE, ALA., U. S. A.

## OUR BACKDOOR NEIGHBORS

BY FRANK C. PELLETT

A book of fascinating stories of animal life. Will delight the children and please the grown folks. Illustrated with many photographs from life.

**PRICE $1.50 POST PAID**

**AMERICAN BEE JOURNAL**
HAMILTON, ILL.

**BEEKEEPERS** WE MANUFACTURE DOVETAILED HIVES, HOFFMAN FRAMES, SECTIONS AND SHIPPING CASES

Our hives are made of best grade White Pine, cut accurate and smooth to standard measure. Sections are made of Basswood polished on both sides. There are no better made.

We carry a complete line of everything used in the apiary. Our shipping facilities are as good as can be found anywhere. We want your business. We guarantee prompt and satisfactory service. Price list free.

**MARSHFIELD MANUFACTURING COMPANY, Marshfield, Wis.**

## PACKAGE BEES FOR 1922

We Specialize on Three-band Italians Bred for Business.

A 2-pound package of our hustlers with a select untested queen for $5; 25 or more, $4.75 each. Special prices on large lots. One-fifth cash books your order. Order early and make sure of shipping date. We do not accept more orders than we can fill promptly.

**CANEY VALLEY APIARIES, Bay City, Texas**
J. D. YANCEY, Mgr.

QUALITY
TIN CANS
FIRST
For PACKERS and MANUFACTURERS of FOOD PRODUCTS
LARGE CAPACITY
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YOUR INQUIRIES SOLICITED
W. W. BOYER & CO. INC.
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First Lessons in Beekeeping, by C. P. Dadant. 167 pages, 178 illustrations. Cloth $1.

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HAMILTON, ILL.

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If no dealer, write factory
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# HONEY

## The World's Best Sweet for Children

NOW IS THE TIME TO SELL YOUR

# HONEY

We are the largest distributors of Bulk Honey imported and domestic in the United States

## WE CAN SELL YOUR HONEY

Write us today, state the quantity and quality, how packed, shipping point and carload and L. C. L. freight to New York and mail liberal size sample. Include in your first letter your idea of price

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**217 Broadway, New York**

**THIS IS THE "SIGN" ON EACH CYPRESS BOARD**

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No. of Mill
TRADE MARK REG. U.S. PAT. OFFICE

**DON'T GUESS MAKE SURE. "HAVE A LOOK"**

CYPRESS RESISTS ALL ROT INFLUENCES

For all uses that invite decay (for instance, bottoms) demand

**"ALL-HEART"**

*"Tidewater" Cypress*

"THE WOOD ETERNAL"

The "arrow" on the end of each board identifies the genuine product of the cypress mills whose CHARACTER of timber, methods of manufacture, and complete responsibility enable them to be members of the Association.

THIS FACT IS YOUR PROTECTION.

ACCEPT NONE BUT TRADE-MARKED "TIDEWATER" CYPRESS

CYPRESS "THE WOOD ETERNAL"

**SOUTHERN CYPRESS MANUFACTURERS' ASSOCIATION**

1251 Poydras Building, New Orleans, La., or 1251 Graham Building, Jacksonville, Fla.

**Insist on TRADE-MARKED Cypress at Your Local Lumber Dealer's** **If he hasn't it, LET US KNOW**

DO YOU USE ALUMINUM HONEYCOMBS?

IF NOT, WHY NOT?

**Each comb is in itself a valuable asset to any apiary. It is the only comb which enables BEEKEEPERS TO OBTAIN ALL THE HONEY without waiting for the bees to draw out foundation. THEREBY SAVING TIME AND MONEY.**

**We can prove that no practical BEEKEEPER can afford to be without the ALUMINUM HONEYCOMB**

In a recent issue of a National Bee Publication the following question and its answer appeared:

Q. What is the total cost of a fully drawn out wax comb?
A. The mininum cost of drawing out a wax comb is 50 cents.

PRACTICAL BEEKEEPERS are buying ALUMINUM HONEYCOMBS because they

Cannot be destroyed by moths or rodents
Make extracting of honey easy
Control production of drones
**Can be sterilized**
Prevent loss by melting
Increase production
Last forever with reasonable care
**Cost no more than wax combs**

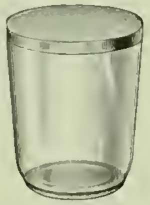
**THE DIAMOND MATCH CO., Apiary Dept., CHICO, CAL.**

**Sole distributors for DUFFY-DIEHL, Inc., Pasadena, Cal**

# PACKING, SHIPPING and LABELING HONEY

**To give good service you must pack and ship well. To attract new customers and retain old ones, not only pack and ship well, but make the package attractive and handsome by using the right kind of containers, honey labels and cartons. The package oft proclaims the sort of honey-producer.**

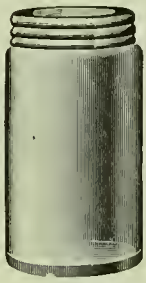
## GLASS TUMBLERS



Our 6½ oz. size tumbler is used extensively wherever a small package of honey is required. Tumblers have tin caps and waxed paper for making a tight seal. Packed complete in boxes or barrels at the following prices:

| Cat. No. | Weight | Price |
|---|---|---|
| B442102—6½ oz. tumblers, 48 to case | 20 lbs. | $1.65 |
| B442103—6½ oz. tumblers, 480 to barrel | 190 lbs. | 14.80 |

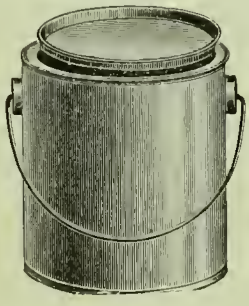
## 16-OZ. ROUND JARS



Extracted honey will sell readily in a neat, attractive, leak-proof glass container. A little money saved on your glass containers often prevents repeat orders for your goods. We have sold large quantities of these jars and we fully recommend them as being the best package, price considered, on the market today.

B442101—16 oz. round jar, weight per case of 24, 18 lbs., per case ........ $1.70

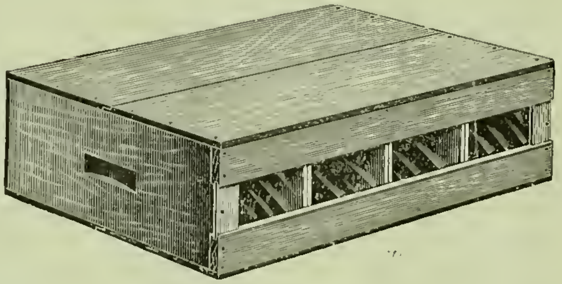
## FRICTION-TOP CANS AND PAILS



For retailing honey in large packages direct to the consumer we know of nothing better than the friction top cans and pails.

| Cat. No. | Size of Containers. | Weight. | Price. |
|---|---|---|---|
| B442018 | 2½ lb. can, box of 24 | 16 lbs. | $1.60 |
| B442025 | 2½ lb. can, carton of 116 | 35 lbs. | 5.00 |
| B442026 | 5 lb. can, carton of 50 | 25 lbs. | 4.00 |
| B442020 | 5 lb. can, box of 12 | 16 lbs. | 1.45 |
| B442021 | 10 lb. pail, box of 6 | 15 lbs. | 1.20 |
| B442027 | 10 lb. pail, carton of 50 | 45 lbs. | 6.00 |

## SHIPPING CASES



Fine comb honey should be shipped only in the best kind of shipping cases. We have them, furnishing regularly the 24-pound single-tier case. While 24-pound double-tier cases are popular in limited sections of the West, the objection to them is that when they are double-tiered, one row of sections above the other, any leakage in the top tier runs down and daubs the lower one, sometimes spoiling a whole set of sections. We use corrugated paper in the bottom, top, and ends of all our cases, as extensive experience shows that comb honey in cases so equipped goes through in very much better condition. Write for prices.

## SIGNS, LABELS AND CARTONS

**Attractive signs, labels and cartons are an immense aid in selling honey. We have them in all sizes and varieties. Write for our label and sign catalog. Our handsome embossed metal sign, "Honey for Sale," 8x14 inches is especially recommended to home sellers of honey. Price $1 postpaid.**

## THE A. I. ROOT COMPANY
**MEDINA, OHIO**

*There is a Root dealer near you*

# AMERICAN BEE JOURNAL

NOVEMBER, 1921

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The Diamond Match Co. and their agents are the sole distributors in the United States of the Aluminum Honeycombs, manufactured by the Duffy-Diehl Co., Inc., of Pasadena, Calif. Write for descriptive pamphlets. Eastern beekeepers should send their orders for the Diamond Match Co.'s supplies to **Hoffman & Hauck, 1331 Ocean Avenue, Woodhaven, N. Y.**

**DIAMOND MATCH CO., Apiary Department**

**CHICO, CALIFORNIA**

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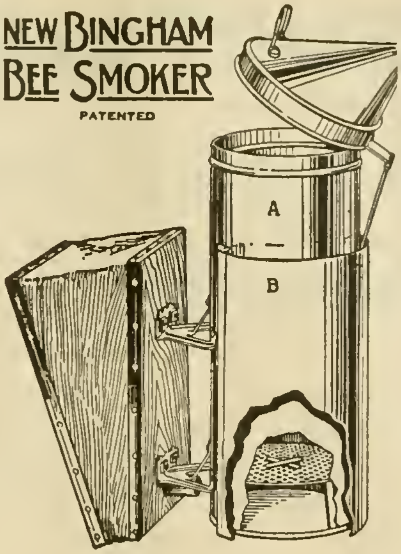

**BINGHAM BIG SMOKE SMOKER**

**Wins contest at New York State Beekeepers July meeting**

Gilbertsville, N. Y., Oct. 3, 1921.
A. G. Woodman Co.:

Last winter I bought a copper Big Smoke Smoker, with shield, of you, and in July took the same to the Chenango County beekeepers' picnic and entered the smoker contest. There were nine contestants and the Big Smoke won the prize, which was a fine queen bee. Needless to say, I was very proud of the victory. They gave us one minute, and at the expiration of thirty-five minutes the Big Smoke was the only one burning. They called it a "Steam Boiler." However, it won, and I thought I would inform you.

C. F. Bushnell.

The contestants were allowed to use any fuel they desired, and as much or as little of it as thought advisable. The contestants were given one minute in which to light their smokers, then let set for thirty minutes. At the end of this period, the one that smoked best in thirty seconds won the prize.

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| Big Smoke, with shield | 4 x10 | 3 |
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| 25 lbs. | 73c per lb. | 25 lbs. | 79c per lb. | 25-lb. lots | 75c per lb. |
| 50 lbs. | 72c per lb. | 50 lbs. | 78c per lb. | 50-lb. lots | 74c per lb. |

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¶ Beekeepers who are supplying Honey to a regular family trade, or who are located along the highways, and are supplying motorists, know that their customers want a honey of a uniform color and flavor.

¶ And unless the Honey is at all times uniform in color and flavor, customers sometimes become dissatisfied.

¶ Our special blend of fancy Honeys (liquid) is always uniform and is of a fine mild flavor, and will satisfy the most exacting trade.

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| 5 lb. Tins, 12 per case | 17c lb. |
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10-lb. pails (with handles), ½ doz. reshipping cases, $1.10 case; crates of 50, $5.75

60-lb. tins, 2 per case—new, $1.30 case; used 25c.

### WHITE FLINT GLASS, WITH GOLD LACQD. WAX LINED CAPS

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**And that is why** (through the constant improvement) **Dadant's Foundation** still **tops the heap** for real quality.

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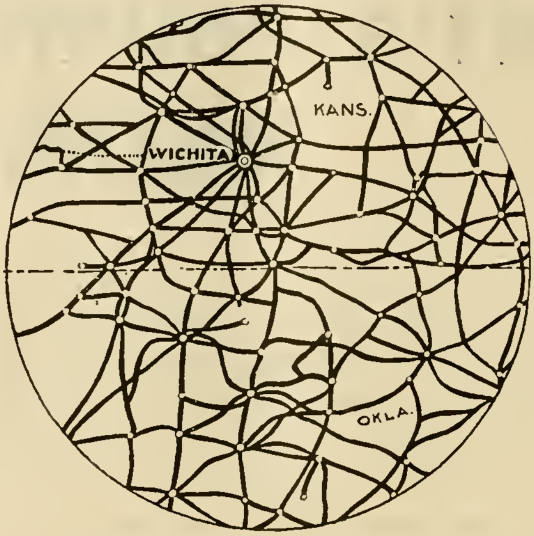

¶ For the benefit of beekeepers of the Central Southwest and to answer and ever-increasing demand from the beekeepers of that territory, a branch of the G. B. Lewis Company is being established in Wichita. Note the railroad facilities.

¶ Lewis workmanship, "Beeware" quality and Wichita shipment will be three of a kind. Call and see us at 415 So. St. Francis street, Wichita, Kansas.

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AMERICAN
BEE JOURNAL

VOL. LXI—NO. 11 HAMILTON, ILL., NOVEMBER, 1921 MONTHLY, $1.50 A YEAR

# CARE OF HONEY FROM EXTRACTOR TO MARKET

## Ripening, Straining, Liquefying, Packing, Etc.

—By C. P. Dadant

The beekeeper who harvests honey in sufficient quantities to put it up in barrels is quite a producer. Usually, when he has gone that far, he has devised his own methods. He perhaps has a central plant in which he does all his extracting and keeps large tanks and a number of implements which would be too expensive for the average producer. This article is intended to give the best methods that we know of for the producer who is not organized on a large scale, but who may have one or more outapiaries and tries to retail at least a part of his honey.

But why put up the honey in barrels at all? Well, there are several good reasons. If you use good barrels, sound, dry, not charred inside, well bound, with iron hoops, it is at least as safe to put up and haul the honey in that way from your outapiaries as in tin containers. We use second-hand alcohol barrels, which have been gummed inside so that there has been no loss of alcohol, and such barrels, if well cared for, need never lose a drop of honey. We have used the same ones over and over, for years. They are more easily hauled around than cans, there is less danger with them from ants and other insects than with tanks, and if you must keep the honey from one year to another, in order to get the price that you want, it will keep better in one of those barrels than in tanks or cans. We kept honey as long as 5 years, after a record crop, rather than throw it upon the market at a low price and finally came to a short crop, when we were glad to have it for sale. It is easier to take the granulated honey out of a barrel than out of a metal tank, unless your tank is so placed as to be heated artificially to liquefy the honey. By carefully marking the head of the barrel so as to replace it in the same position exactly, using a gimlet in the center of the head to pull it out, loosening the hoops only as much as necessary, using a new, clean spade to take out the honey, we can replace the head and tighten up the hoops again after removing the honey, leaving the barrel just as good as before. It is true that we remember having bought some "honey kegs" from a dealer in Chicago, years ago, and found that those kegs would not even hold water, much less honey. Yet, even such kegs, if thoroughly dry, could be made to hold honey, by heating them and dousing the inside with a mixture of hot wax and grease. The grease must be sweet and odorless and only enough should be used to make the wax soft. This mixture enters the pores of the wood and cools there.

Loading barrels to be filled at the outyard

But here comes an objection: How am I to handle barrels full of honey if I do my work alone? This is an argument which we cannot overlook. Yet, I have filled barrels with honey, loaded them on the wagon and unloaded them, without help, by the use of long skids, and when I could not get skids, I used a long ladder, supported at intervals to bear the weight of the barrel. Then I used the declivities in the yard, placing the wagon at the lower side. We used to say that a man was not a "man" unless he could up-end a barrel full of honey. If you do not wish to do heavy lifting and you are alone, you

Shallow settling tanks used by R. V. Cox, a New York beekeeper

will have to discard the case of two 60-pound cans, for such a case weighs 135 pounds and has to be lifted or slid along on skids, also. There is considerable heavy lifting about a crop of two or three tons of honey.

The objection we have to the use of 60-pound cans is that we want to put up our honey in small receptacles as the orders come. So we would need to empty those 60-pound cans of the honey put in them. The average honey producer knows that a 60-pound can which has been filled and emptied is only a second-hand package afterwards, for it is difficult to rinse it and have it again perfectly dry. That is why we prefer the barrel, which is just as good, after having been filled and emptied several times, if we care for it properly. We must never put water in it, or if we do, just to wash out the small particles of honey, we should drain it at once and keep it in a dry place, and tighten the hoops before using it again.

### Ripening

But let us come to the first question of this article: ripening honey.

It is unnecessary to advise the beekeeper not to extract his honey until it is as fully ripened as the bees can give it. But, unfortunately, even capped honey is not always fully ripe. If your honey is not ripe and you do not have tanks in a warm, dry building, in which you may leave it during the hot weather, you will need to ripen it artificially. This may be done at the time of putting it up in small packages, if it is not so green as to ferment before that time.

How am I to know that my honey is ripe? Ha! This is a hard question. You will have to trust your judgment. Much depends upon the heat of the day in looking at the flow of the honey. But if you leave it long enough on the hives, there will be very little chance of having it too green. I do not remember getting unripe honey more than two or three times, and I soon found it out. If you have a gallon measure and an exact scale, you may weigh it. Or you may use a hydrometer. . I never did.

If you are not provided with large heating tanks, you may liquefy or evaporate honey by using a few large pails in a wash boiler on the stove, or in some flat boiler, which may contain several deep pails. Place a couple of slats of wood under each pail so that it will not rest flat on the bottom of the boiler. Fill your pails to convenient depth with honey. Place them in the boiler. Then put enough water in the boiler to reach up about two-thirds the height of the pails. If you do not have a special stove, and must use the kitchen stove, you should leave enough room at the front for the housekeepers' service, or you may hear from her.

The water in your melting boiler must not come to a boil. After a little while, the honey in the pails will begin to melt along the edges. Stir it and it will melt more quickly, for the center of the mass would be slow to heat. You need not get it all melted before taking it off. A little experience will indicate to you when it is melted enough to finish melting from its own heat, off the stove. Heating things over water in this way is what cooks call "bain-marie."

Have some sort of a tank ready, high enough from the floor so that you may put a scale and any of your retail receptacles under the faucet. An extractor can is very convenient, if you are through with the extracting. Usually the retail receptacles are filled to the brim, so that they do not need to be weighed, but it is best to have a scale so that you may be able to weigh any quantity, small or large.

One thing you must remember: The quicker you melt the honey and cool it, the less color it will gain and the less flavor it will lose. If you heat it too hot, you will evaporate all those fine essential oils which gave it the flavor of the blossoms and distinguish honey from molasses, and even maple syrup. But whenever you heat it, if it is ever so little, it will give off steam and become thicker. It will, of course, lose in weight. Better melt it too slowly than take risks of overdoing it. Good honey should not go less than 11¾ pounds to the gallon. The regular weight of ripe honey is 12 pounds to the gallon.

Honey that has been heated will usually not granulate again. The riper honey is, as a rule, the less readily it will granulate. This statement was first made to me at a beekeepers' meeting, in 1885, at Syracuse, New York, by our old friend L. C. Root, the son-in-law of Moses Quinby. When I heard this assertion, I shrugged my shoulders in irony. But I learned afterwards that he was right. However, some grades of ripe honey granulate very readily. I will mention alfalfa and heather. The latter, we are told, is usually so thick when harvested by the bees that it cannot be thrown out by centrifugal force. I never had a chance to test this myself.

### Straining

The heading of this article says something about straining honey. I

Strainer in place for filling barrel

was about to forget it. The first extractors made were supplied with a strainer just above the faucet or honey gate. In less than half a day of practice we had to take this out, for it clogged. We use a large strainer over the barrel or receptacle in which the honey is to rest. This is made of a flour sieve with a broad rim to enable it to take a good amount of honey. If you use a tank and a pipe to run the honey to it, you must have this sieve above it. Only small particles of wax which have passed through the sieve fall into the honey, and will float on top. If you expect to keep the honey in barrels until after granulation, you should set the barrel "on end" in the honey room. The wax will come to the top and you can readily scrape it off after taking out the head. If you draw out the honey while liquid, there will be wax in the last gallon or so that you draw out. The same may be said of a closed tank. This is put into a small receptacle and skimmed off after the honey settles. We can keep on drawing the honey off until there is only a gallon or so of skimmings from several barrels. If it is your own honey and you know it is free from germs, you may feed it to some needy swarm. If you are not acquainted with it because you have bought the honey from some stranger, better make this stuff into vinegar. No need of losing anything. By heating it above 145 degrees you will melt the wax and it will cake over the surface.

By following the method which I have just mentioned you will have your honey, in liquid form, in the very best shape to put it up into all sorts of small receptacles, from the "individual package," of an ounce or less, to the 10-pound pails. It will always be clean and thick. It will keep the flavor of the blossoms. You may "blend" it, if you have two or three different crops. To do this you must heat it. This is sometimes advisable. But if you sell to the consumer or to the small retailer who know you, it is as well to supply the special bloom which they will learn to know: white clover, sweet clover, raspberry, basswood (by the way, basswood may give its flavor to a large amount of honey), persicarias, Spanish needles or bur marigold, several kinds, or if you live in the West or the South, you may have cotton honey, catclaw, sage, orange, etc.

By this time, if the large producer has followed me, he will have noticed that I am writing for the man who has none of the expensive conveniences of the big establishment. The man who has a two-story honey house, with a four-ton tank in which to pour the honey and which he can heat at will, has no need of instructions. As I have already stated, he has his methods.

One little hint: If you have leaky cans (sometimes a can will have an imperceptible hole which would not leak water but from which honey will ooze), do not trouble yourself with emptying the can to repair it. Just have a little handful of beeswax or paraffine melted with a little tallow, about half and half. Then rub a little of this over the leak. The can will be repaired, in this way, until it is washed with boiling water. I have often repaired even large tanks with this material, and I remember when a plumber could not stop leakage in a lead water tank of 25 barrels in my attic, and I came to the rescue with a little of this tallow wax. We did not know exactly where the leak was, but the wax found it when we rubbed it over the surface. The plumber said that was a good way to humbug the customer. It was a **good** way, sure. This was my own discovery after emptying hundreds of leaky cans, to solder the holes, sometimes making it worse than before. If the tenderfoot has ever tried the soldering iron, he knows some of the tribulations of the apprentice tinner.

### PRIZE CONTEST

We want to know what kind of material is of greatest interest to our readers in order that we may be able to publish a better Journal. To find out, we make the following offers:

#### Contest No. 1

For the best letter of not more than 300 words, telling what you like best about this year's American Bee Journal, and your reason therefor, we will pay

**$10 in Cash.**

For the second best letter, $5 in cash, and for third prize, choice of any book published by our firm. Look over all the numbers of the year 1921 and tell us what article pleased you most or was most helpful to you or what particular feature was most worth while.

#### Contest No. 2

We want more good pictures. It is true that we already receive far more pictures than we can possibly use, but these we file away with the name of the person from whom they come, in the hope that they will later be of use. The more we have to select from, the better the variety we can use in each number. We want at least ten to choose from for every one that we can find room for. For the best photograph illustrating any phase of beekeeping we will pay

**$10 in Cash.**

For the second best, $5, and for the next five, choice of our dollar books on beekeeping. Only good, clear photographs suitable for reproduction are of interest to us. New methods of manipulation, new items of equipment, attractive ways to arrange an apiary, or anything of interest to the beekeepers, may be shown.

Contest closes January 1.

Address letters and photos intended for this contest to Contest Editor, American Bee Journal, Hamilton, Ill.

May I say a word in favor of selling as much of granulated honey as possible? I know that most beekeepers avoid the task of explaining that granulated honey is absolutely pure and that, with only a few local exceptions, consumers imagine that granulated honey is adulterated. But it is not so very difficult to convince them, if we go at it right, and it helps the sale of honey greatly. We have a trade in granulated honey and many people learned to prefer it to liquid honey. Why not?

If the beekeepers wish to increase the sale of honey, they must make an effort to convince the public of the best way to recognize its purity. They must also instruct the customers on the methods by which honey is extracted. Some people have so little idea of its manipulation that they call extracted honey "extract of honey," giving the impression that the honey in that shape is not pure bees' honey.

I will never forget my disappointment, when I made my first attempt at selling extracted honey, clover honey, to a druggist, in 1869, just after the invention of the honey extractor. At that time druggists were the only people who handled honey in the Central West, and they were accustomed to the "strained honey" taken by either killing the bees or driving them out and crushing the combs to **strain** the honey out of the pollen, brood, etc. My honey, the first that we had ever extracted, was clear, light-colored; well, you know how white clover honey looks. I came to the druggist with all the confidence of an 18-year-old boy who has something of excellent quality for sale, a brand new product. The druggist took up a sample of that honey, looked at it, then with a frown he said: "We don't buy sugar syrup. We know how to make it when we want it." I tried to explain, but he would not even listen. That man bought extracted honey from me later, granulated honey, after he found out that there was indeed a new way to take honey from the bees. But it was a hard task to convince him. Nowadays, the beekeeper can provide himself with some "Facts about honey" which are printed for the benefit of the trade, and show his customer that this is not a new-fangled swindle, as my druggist thought at first. We had no one to back us in our sales, since we were the first in the country to adopt the honey extractor.

There will be more demand for honey than the beekeepers of the world can fill when the public is fully convinced that they can buy pure honey, for no one doubts the value of honey as food.

### Price of Hubam Seed

Hubam annual sweet clover seed is starting this fall at a price of about $120 per bushel, or $2 per pound, only about one-fourth of the price of the seed last year.

AMERICAN BEE JOURNAL
Established by Samuel Wagner in 1861

The oldest Bee Journal in the English language.
**Published Monthly at Hamilton, Illinois.**

Entered as second-class matter at the Postoffice at Hamilton, Illinois.

SUBSCRIPTION RATES—In the United States, Mexico and Canada. $1.50 per year; five years, $6. Other foreign countries, postage 25 cents extra per year
All subscriptions are stopped at expiration. Date of expiration is printed on wrapper label.

THE STAFF
C. P. DADANT ........................................Editor
FRANK C. PELLETT ......................Associate Editor
MAURICE G. DADANT ..............Business Manager

(Copyright 1921 by C. P. Dadant.)

# THE EDITORS' VIEWPOINTS

## THE MILLER MEMORIAL FUND

Receipt of contributions for this fund have been made in the bee journals and the thanks of the committee which has the fund in charge is extended to each contributor. These thanks are extended in behalf of the thousands of friends of Doctor Miller everywhere, who are anxious that this memorial shall be worthy of the man.

As is well known, the undersigned committee was chosen by Mr. C. P. Dadant to act informally in collecting and expending the money to be contributed by the many friends of Doctor Miller. At the time of the first announcements it was quite impossible to tell what form the memorial should take, and as a result the whole matter was presented in quite an indefinite way. Suggestions were made to the committee of various forms in which the memorial could be established. Some desired a monument to be erected at his grave, but this was quite disapproved by most of those with whom we could talk, because it did not seem fitting that Doctor Miller's memory should be perpetuated in such a manner.

Following out the widely approved idea that this fund should be put to work for the benefit of beekeeping for all time, which is the type of memorial that fits the character of our esteemed friend, the most feasible suggestion seems to be to establish a library in which may be collected the books, journals and reprints of scientific articles on bees and beekeeping, available to those who desire to make special studies in this field. Such a memorial will be less widely available than we would wish, but it follows out the ideas of the many friends who are interested in the fund better than any other that has come to us. This is what we shall work for.

The location of the library is, of course, still undecided, and the method of management and the safeguarding of the funds for the future are matters which can be determined only after we are able to know how much will be available, but in any event we hope to establish a fund which shall be permanently invested so that the interest shall be used for the furtherance of this library.

For the funds available we know of no more important endowment than this one, for there is today no library in the United States that approaches completeness in this field. There are several excellent private libraries on beekeeping and also several growing institutional libraries of great value, but we hope as the years go by that the Miller Library of Beekeeping will surpass any of them. We also hope that contributions of valuable books and pamphlets will be made so that this library will grow rapidly.

With this definite plan we make another appeal to the beekeeping friends of the late Doctor Miller to contribute still more liberally than they have to this fund. Many are able to increase their contributions, and a still larger number who have not contributed will now, we feel, be anxious to help in this worthy cause. In contributing to a lasting memorial of this kind we not only honor the memory of a great friend but we help in the furtherance of the industry in which we are all so greatly interested. Contributions may be sent to the editors of the American Bee Journal and Gleanings in Bee Culture, and will be acknowledged through these journals. May we not ask for greater liberality now that we are able to announce a more definite plan, and may we not all unite in making this a project in which all beekeepers throughout the world may take just pride?

We would also ask that at the meetings of beekeepers for the next few months this project be brought to the attention of those in attendance so that they may have an opportunity to make contributions. Several beekeepers' associations have already taken such action and in this way liberal contributions have been made. We ask for the hearty co-operation of each and every beekeeper in this movement and want each one to feel that this is not merely an effort being made by a committee, but that it is a project dear to the heart of every beekeeper everywhere.

C. P. Dadant,
E. R. Root,
E. F. Phillips,
E. G. LeStourgeon,
B. F. Kindig.

### Fruit Scare; Honey in Demand

Mr. Honey Producer, do you realize that when fruit is high in price and hard to get, there is more demand for honey? Do you realize also that, if everybody in the country could be convinced that your honey is, really, pure bees' honey, unadulterated, you could not begin to supply the demand for it, at remunerative prices? So do not lose heart, if some one offers you too low a price at wholesale. Get out of your lethargy, and stir yourself enough to apprise the world that you have pure honey for sale, that you guarantee it and will put up any amount of money to back its purity. Advertise; it will pay you, not only for the coming winter, but for many a winter to come. This is not guess work, but the practical experience of the man who writes this, who has sold honey for more than 50 years, with profit.

### Honey as Sauce

Years ago, I remember James Heddon arousing my indignation by saying that, at best, honey was only suitable as "sauce." Sauce! That is to say, he could not see the use of honey except as a condiment for something else, a secondary affair. Well, I don't see it that way. Every morning I eat honey for breakfast, on either bread or hot cakes, not as a sauce, but as the principal ingredient of my meal. The bread or cakes are only used as a carrier for the honey. Of course we can use honey also on different dishes. But the man who does eat honey, without the idea of securing the high flavor of the flowers from which it was gathered, is not a lover of honey. If you add butter, or jelly, or any other edible than good bread or cakes to your honey, you spoil or hide the fine flavor of it and you deserve to be condemned to eat nothing better than the vile corn syrup which many people call a delicious food. Don't mix fine things with other things of less delicate flavor if you want to get the full benefit of them. The great fault with our people is that they don't really know "how to eat"; they gulp down their food. They do as the drunkard who does not want a light, tasteful drink, but seeks the kick, and wants it hard. Let us learn how to eat, and we will then appreciate pure honey from the blossoms, the finest gift of nature, the ambrosia which was said to be the aliment of the gods in Olympus. The Greeks, at least, knew honey to be something more than "a sauce."

### F. W. L. Sladen

In another column the reader will find an obituary of Mr. Sladen, by his assistant, Mr. Gooderham. We wish to add a few words.

Mr. Sladen was an ardent naturalist and scientist. To appreciate it one needs only to peruse the pages of his two leading works, "The Humble-Bee" and "Queen-Rearing in England." A slight awkwardness in his speech, especially when he used some foreign language like French, prevented those who met him for the first time from fully appreciating him. But those who read his writings grasped the full value of this able observer. His descriptions, his enlarged photos of the nests, the eggs, the larvæ of Bumbus, his colored plates of this insect, show a minuteness of details which place him among the men whose work cannot be excelled.

Although his book on "Queen-Rearing in England" is not indispensable to the practical American queen-breeder, it has some excellent cuts and a number of good points not to be found elsewhere. The beekeeping world loses in him one of its best scientists.

### More Bee Pasture

The extension of the area planted to sweet clover is opening hundreds of new locations suited to commercial honey production. The change of attitude toward this plant is one of the remarkable developments of recent years. From a despised weed it has come to be regarded as one of the most dependable agricultural staples. Farmers are sowing it everywhere and there is every indication that within the next ten years there will be at least ten times the amount of sweet clover grown on the farms that is to be found now. It seems adapted to almost every type of soil which is not lacking in lime, and succeeds from Canada to the Gulf States.

As a soil builder it has no superior, and this fact is largely responsible for bringing it into the favor of the farmer. The new annual now being boomed under the name of "Hubam Clover" fits in with a crop rotation much better than the biennial form. Since its general use would greatly increase the available forage for the bees, beekeepers should lend every encouragement to its further spread. Sweet clover has doubled the average of surplus in many places and has made many good locations where beekeeping was not profitable prior to its coming.

Everywhere one goes, one hears stories of success with this plant as a farm crop. Not long since, the writer heard of a man who bought a run-down farm in New York and sowed a field of sweet clover. A fortunate combination of a good seed crop and a high price enabled him to pay for the farm with the one year's crop. It is farther west, however, where it seems to be most popular. In almost any section of the Mississippi Valley one hears of many fields of it being sown.

### Wintering Bees

One of the profuse bee writers of 40 years ago, James Heddon, wrote this axiom: "Beekeeping is a business of details." This is certainly correct, for though a bee owner may harvest large crops when he neglects the details, he will not have complete success unless he looks after them.

Wintering is probably more a matter of details than any other part of the business.

The honey, or the food, whatever it be, must be of good quality and sufficiently plentiful. Fruit juices kill bees as promptly as paralysis or the Isle-of-Wight disease. Honeydew is not much better, neither is honey which is loaded with numerous pellets of pollen. But it is also necessary that the food be located properly, above the cluster as much as possible. Our Canadian neighbors who feed sugar syrup, after the crop, so as to fill all the room that the bees may have above and under the cluster, have evidently found out that this food helps carry the bees with very little residue, until a good part of the bad season is over.

The strength of colonies at the opening of winter is very important. If they do not have a good number of young bees, there is much chance for them to become reduced in strength before the queen has occasion to breed again. But they must not be breeding at the opening of winter, for quiet is indispensable. They must not be disturbed in the least, especially when the weather is cold and the bees that wander from the cluster may be chilled.

Comparatively weak colonies may be wintered safely if in good condition and if they do not have a large space to keep warm. We have wintered colonies on 5 combs, when these were full and the cluster covered them readily.

Shelter against polar winds is of importance. The name of polar winds, used by Mr. Langstroth, seems very appropriate, for the Mississippi Valley and the Lake region do not have a single good-size mountain to shelter them against the winds that blow from the direction of the north pole. A splendid windbreak is one of thickly planted pine trees or other evergreens. The thermometer is often several degrees warmer on the south side of such a shelter. But an artificial windbreak is readily made, though it is not quite so efficient.

A good cushion over the cluster, which would act like a heavy woolen blanket over your bed, absorbs moisture without allowing a draft of air, and is of great importance where the bees are confined for several weeks without being able to fly.

How shall we winter, in the cellar, in the open air with outer cases, or with only temporary shelters?

This is a question of locality. What will succeed in one part of the country will not do in another. If our bees can get a flight in fairly mild temperature once every 3 or 4 weeks, they will winter readily without much protection. If the cold spells are protracted they will require more warmth. When they are to be confined 2 months at a time without any let up in the cold weather, they will probably be best in the cellar.

But don't let us forget that "Beekeeping is a business of details." The little details effect the difference between success and failure.

### Food Value of Honey

We are in receipt of an extract, in bulletin form, from the American Journal of Physiology on the "Vitamine Content of Honey," by Messrs. Philip B. Hawk, Clarence A. Smith and Olaf Bergeim, of the Laboratory of Physiological Chemistry of Jefferson Medical College, Philadelphia.

The details given in this bulletin are too scientific for the average reader, but the conclusions are in plain English which anyone can understand. We quote:

"An examination of the chart will show that the bread with honey was digested and left the stomach as quickly as the bread alone. Similar pepsin values were obtained; and while there was a slight depression of acidity, such as always follows the ingestion of foods containing much sugar, digestion was completed as soon as with bread alone, although the addition of the honey had practically doubled the food value of the product from the energy standpoint.

"The use of honey with bread and in similar ways would, therefore, appear to be generally preferable in the case of children to the eating of candies. Honey serves to make the highly nutritious bread more palatable, leading to a greater consumption of body-building foods instead of depressing the appetite, as is likely to be the case with candies which are eaten betwen meals. At the same time, honey furnishes to the body very considerable amounts of energy in the most available forms. The high place given to it in the diet is therefore well deserved."

### Death of Miss Godfrey

It is with regret that we learn of the rather sudden death of Miss Mattie C. Godfrey, which occured in Sacramento, Calif., on September 28.

Miss Godfrey will be rembered by our older readers as compositor with the American Bee Journal previous to 1918. She had been a faithful employee of the American Bee Journal for thirty-five years, seeing a succession of editors during that time. To anyone who has known her and realized her untiring integrity and devotion to her work, as have we in this office, her death comes as a personal loss.

### Death of Pioneer Beekeeper

We regret to announce to our readers the death of Mr. W. Muth-Rasmussen, who died at his home in Independence, Calif., some weeks ago. Mr. Muth-Rasmussen was one of the oldest of California's beekeepers. In our January issue Mr. Pleasants mentions him as having been one of the first users of the Peabody extractor, having had one shipped to him in 1871.

Looking back over the files of the American Bee Journal, we find Mr. Muth-Rasmussen's name prominent as early as 1874, when he was one of the charter members of the Los Angeles County Beekeepers' Association. In May of the same year he wrote an article for publication, giving notes on the honey flora, crops, etc., of California. Since that time he had been a regular correspondent. He was a successful beekeeper till the time of his death.

# A WORD ABOUT TRUCKS

## Notes on the Beekeeper's Requirements for Outyard Work

By E. F. Atwater

Many beekeepers who operate a number of apiaries use the Ford truck, and its very low first cost, most moderately priced repair parts, and light tire and gasoline expense, all combine to make it a very good truck for those, at least, whose yards are near home and on good roads. But hereabouts the beekeeping purchasers of Ford trucks usually find it necessary to equip with oversize tires and shock absorbers, and very desirable to add the self-starter, when, with all these added, the cost is not so low but that the man whose yards are on rough, hilly, or sandy roads, and perhaps long distances from home, may consider paying more and buying a truck which can make better time on the road, and with more surplus power to pull through sand, mud, or up steep grades.

Hereabouts, the Ford truck is about third in popularity, with the most extensive producers, and these men of many yards are some of them devoted to the Olds, and others to the Reo, with the Maxwell used by one or two. The Olds and Reo are both sturdy, amply powered, speedy outfits, for their size and price.

One of our own outfits is shown in the cut, with trailer, both occupied with empty 5-gallon honey cans. When loading the trucks with cans or empty supers of comb, "the sky is the limit."

Our other truck is a small Republic, and after one or two more seasons will likely be converted into a one-ton, four-wheel trailer. Both trucks are equipped to haul trailers, to be used when necessary, which is very often, indeed. All trucks should be equipped with spring trailer hitches, to save jerking, which is very hard on a truck or car, and the springs should take up both pull and thrust.

The truck body should be of convenient size, and after the use of a top over each of your trucks, tops covering seat and entire body, we cut off the tops, so as to have cabs only, as it is an intolerable nuisance to have a top when loading or unloading, a veritable back-breaker, as one cannot straighten the back between lifts. Along the sides of the body heavy hooks should be bolted, so ropes can make the load secure.

We always carry shovel, axe, towing cable and a powerful lever pull-out machine, so as to be ready to get out of a mud hole; also a broom to sweep out the body before loading bees or honey.

Where the roads are rough, spring breakage can be materially reduced by the use of a good set of rebound snubbers, or shock absorbers of some kind.

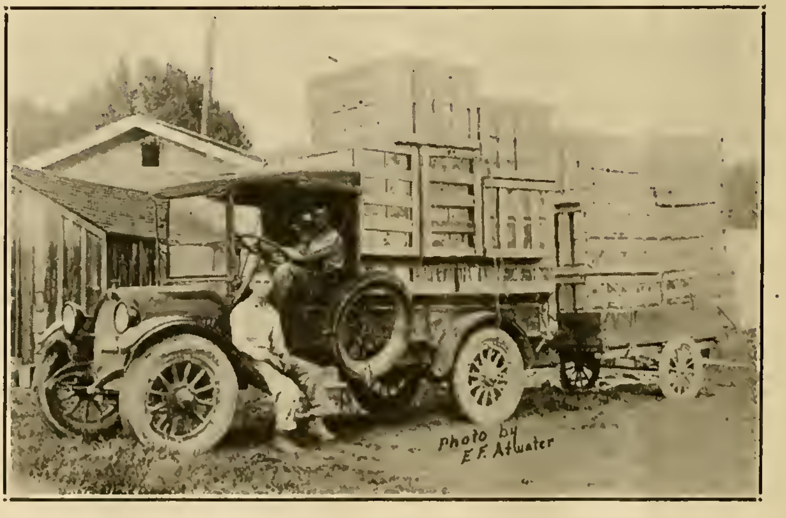
The two-wheel trailer is fairly satisfactory, but the four-wheel trailer is in some ways much better, as it can be readily loaded or unloaded while uncoupled from the truck, while the two-wheel trailer must be blocked up if loaded or unloaded while not connected to the truck. Our small trailer body is about 45 inches wide by 84 inches long inside, and takes 10 ten-frame bodies, or 12 of the eight-frame size, on the floor. The trailer tongue must be twice as strong as you think necessary. We thought ours was amply strong, but one day when we had a load of extracting supers of empty comb, about six stories high, and were going about twenty-five miles an hour, it broke. The front end of the trailer went down, struck the ground, and the entire trailer and load turned over in the air while making a clear jump of about a rod. The damage was considerable. We use a larger and stronger tongue now. The local blacksmith suggested a stick eight by eight inches, but it is not quite so large.

With as much care as bees require here, the automobile expense is one of the heavy items involved in commercial honey production, which it scarcely seems possible greatly to reduce, as with often rough roads, the gas, oil, tires and repairs run into a large sum each year; yet can we afford to use slower, cheaper trucks when, with a crew of several men, we would then waste much more time on the roads?

The seat of the truck as shown, accommodates comfortably three men, if none is large, while for a fourth man we have a folding auxiliary seat which attaches to the outside end of the seat, on the opposite side. When we must carry six men, we use cushions between the fenders and hood, and a man sits on each side, on and leaning against, a cushion. When the bees have given up their attempts at swarming, we need not carry so large a crew.

We hope some day to have two sliding bodies for the truck, then when we arrive home, the entire load will be slid into the extracting house and a waiting load on empties slid onto the truck, ready for a trip to other yards.

Idaho.



A big load of cans

### WHAT YOU GET FOR YOUR MONEY

By Frank C. Pellett

In these days of price readjustment we feel that a statement of conditions as they confront the publisher is due our readers. We are especially pleased with the number of letters received paying compliments to the quality of the American Bee Journal. For every one complaining of the subscription price, we receive several of commendatory tone.

We have recently figured our expenses and find that it costs us 20 cents per copy for every number of the Journal as now published. Of this the advertisers pay 8 cents for the privilege of placing the merits of their goods before our readers. After deducting the money received from advertising, it still costs us 12 cents per copy, or $1.44 per year for every subscription filled under present conditions. It will be seen that the profit to the publishers is only one-half cent per copy, or six cents per year per subscriber.

There has not been a time within recent years when it was possible to get out a trade journal of the quality we are now sending out for less than $1.50 per year. When the recent decline in paper prices came we added eight pages to the size of the Journal. This equals 16 pages of the size of most of the bee magazines, which we have added to our former output.

Judging from the letters received from our readers, we believe that the great majority of them prefer a high-class magazine at $1.50 per year, to a poorer one for less money. Since we could not reduce the subscription price without reducing the size or quality of the Journal, or printing it at a loss, we propose to spend any saving which may be possible through lower costs of publication, in making a still better Journal. We have other improvements in mind which we hope to add just as soon as the costs of publishing are reduced to a point which makes it possible.

In no other product of human endeavor does the consumer get so much for his money as in magazines. It costs us more than $2,500 to assemble and publish a single issue of the American Bee Journal, yet the subscriber gets his copy for 12½ cents, or $1.50 for 12 issues, which cost us $30,000 to publish. This is possible because the cost is distributed among so many individuals. A half-tone cut, to reproduce a single one of the many pictures which we show, costs about $4.00, yet it is as good for 20,000 copies as for one. The same thing applies to the cost of setting the type, which takes no longer for a large number of copies than if only one was printed.

Again, we wish to express our sincere appreciation of the hundreds of letters of encouragement which have reached us during the past few months. A number have said that the American Bee Journal is the finest publication of its kind in the entire world and this encourages us to make an extra effort to make it worthy of the high confidence of our readers.

## F. W. L. SLADEN

### Passing of the Dominion Apiarist of Canada

By C. B. Gooderham

On September 10, Mr. F. W. L. Sladen, Canada's Dominion Apiarist, died of heart failure while bathing at Duck Island, in Lake Ontario. Mr. Sladen had been suffering from heart trouble for several years, and only three years ago was ordered by his physician to take a long rest. It appears that Mr. Sladen, who could not swim, had been in the habit of bathing in shallow water at the edge of the lake, after finishing his work with the bees, and on Saturday went into the water as usual, when he was suddenly stricken with heart failure. Mr. Sladen was not missed from his tent until the next morning, when a search was made by Mr. Thomas, the lighthouse keeper. Mr. Sladen's clothes were found on the shore and the body was found in the water about seventy feet from the shore.

Mr. Sladen was born in 1876, at Shooters Hill, near London, England. He was educated privately and commenced beekeeping at the age of 13. He also became keenly interested in the bumblebees and solitary bees and spent nearly all of his spare time in studying them.

At sixteen he wrote "The Humble-Bee; Its Life History and How to Domesticate It." He also wrote a series of articles on the wild bees for the British Bee Journal. In 1896 he visited India to study the bees of that country, especially Apis dorsata, A. florea and the domesticated varieties of A. indica. In 1901 he visited prominent beekeepers in Canada and the United States. It was in March of that year that he discovered the function of Nassanoff's organ in the honeybee.

All this time Mr. Sladen was specializing in queen rearing and bee breeding, and he developed a hardy golden bee suitable for the trying English climate. The subjects of queen rearing and bee breeding were studied thoroughly and in 1904 he published his book, "Queen-Rearing in England." A second edition of this book was issued in 1913.

F. W. L. Sladen

In 1912 he joined the staff of the Experimental Farm at Ottawa, as assistant Entomologist for Apiculture, and in 1914, when the Bee Division was separated from the Entomological branch, he was given the position of Apiarist in charge. In 1920 this position was changed to Dominion Apiarist.

Since coming to Canada Mr. Sladen has done much for the advancement of Apiculture. Almost his first work in Canada was a study of the honey-producing plants from coast to coast and of the conditions under which they secrete nectar. He has also given much study to swarm control, and developed his two-queen system by which swarming is controlled and the queens are wintered over in each hive. He has also devoted considerable study to wintering problems, and recently issued Bulletin No. 43 on "Wintering Bees in Canada."

Queen rearing and bee breeding, however, have been Mr. Sladen's first consideration, and experiments have been carried on annually by him in different parts of Canada. In 1919 a mating station was established on Duck Island and isolated matings became a fact. The experiments were continued during 1920 and 1921, and a large number of queens have been reared at Ottawa and transferred to the island for mating with drones of special breeding. Excellent results have been obtained and purely mated queens have been distributed to branch farms and beekeepers in different parts of the Dominion. It was while carrying on this work at the Island that Mr. Sladen met his death.

## A PROBLEM FROM INDIA

Dear Mr. Pellett:

A friend of yours suggests placing before you my difficulties in beekeeping, and I do so in the hope that your experience and researches may have embraced sections whence the same troubles have arisen.

The principal enemy to our bees, so far, is a large hornet (more than one kind, moreover) which infests these parts. These hornets hover in front of a hive entrance and carry off the workers bodily and devour them. We destroy their nests when discovered, and I am experimenting with a wire frame placed in front of the hive to allow the workers a better chance of getting away from the hornets. This latter is only a partial success so far, though a decided step in the right direction. Do you by any chance know of any similar trouble, and how overcome?

Norbert T. Gill, India.

Answer.—Beekeepers of South Africa report that some species of wasps, commonly called bee pirates, are a very serious pest in that country. Various methods of dealing with them have been tried, with more or less success. Sometimes they are killed by swatting them by hand as they fly about the hives. This method, however, is tedious and unsatisfactory, as the beekeeper can hardly remain long enough at the hives to do effective work. Traps of different patterns have been used with some success. A common way is to daub bird-lime on branches of trees and place them near the hives. When the pirates alight on the branches they are held by the sticky substance.

A white plate or basin filled with water and oil is also recommended. This is said to be the simplest and most effective method of all. Paraffin is the best oil for the purpose. Some bees will also fall into the basin, but the number is small compared to the number saved by the destruction of the pirates.—F. C. P.

# A RECORDING SCALE

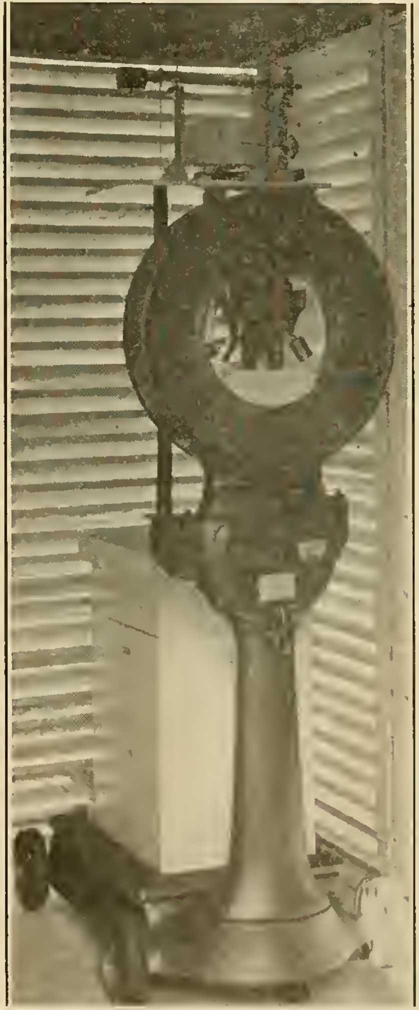
## Details of a Scale Which Records the Changing Weight of the Colony, Hour by Hour, as the Bees Bring in the Honey

By Lloyd R. Watson, Apiculturist Texas Experiment Station

A scale so constructed as automatically to record time and weight is being used at the Texas Agricultural Experiment Station at College Station, in a series of experiments with bees. The periodical weighing of colonies of bees to determine the loss or gain over a given period, is common among apicultural observers, and a very few more or less crude devices have been employed at one time or another to obtain continuous weight records of colonies of bees. To H. B. Parks, formerly connected with the above institution, is due the credit for devising the instrument, by the use of which exact, continuous, automatic record is being kept of the variations in the weight of a colony of bees.

A careful survey of available apparatus made in the light of the exacting requirements of the experiment quickly demonstrated that there was nowhere in existence an instrument that would answer the purpose. For example, the scale must be able to carry a constant load running as high as 300 pounds. The recording mechanism must run at least eight days after a single winding, and it must be able to record changes of load within a range of 20 pounds at any point between 50 pounds and 225 pounds every second of the time. The apparatus must be housed to protect it from the weather, yet meteorological conditions surrounding the hive on the scales must duplicate as far as possible those surrounding a hive in an open apiary. Therefore the scale must be constructed to withstand for an indefinite period of time the action of the weather, and especially the corroding action of humid air. As the result of much study and after considerable correspondence with some of the leading scale manufacturers of the United States and with the United States Bureau of Standards at Washington, D. C., it was decided that the Automatic scale built by the Toledo Scale Company was best adapted to be connected up with a recording clock for this purpose. Julien P. Friez & Sons, of Baltimore, furnished the eight-day clock, and the same firm was engaged to make to special order the eight-inch revolving drum which was to carry the record chart. Mr. A. H. Emery, a mechanical engineer of national reputation in scale construction, residing at Glenbrook, Conn., was employed to construct a super-platform over the dial of the Toledo Scale and to build and mount thereon the system of levers by which the rise and fall of the arm of a lever in the body of the scale should be converted into the sweep of a pen across a moving belt of paper.

The construction and methods of assembly will be better understood from the accompanying photographs. Photo No. 1 shows the complete scale. No. 2 is an enlarged view of the lower lever, and No. 3 is an enlarged view of the upper lever and recording mechanism. It will be seen that motion for actuating the recording mechanism is obtained from an extention to the left of the large lever in the body of the Toledo scale, and attachment is made by means of a bolt clamping device. A vertical support near the left side of the super-platform carries the upper lever over a pair of plate fulcrums. The short end of this upper lever carries a counterpoise weight at its extreme left end and a sensitizing weight above the fulcrum. At the right of the platform another vertical bracket carries stops which limit the motion of the lever. The pen lever rotates on a pivot and its short end is in the form of an arc which is belted to the upper lever with a steel belt. This arc also has a small weight belted to it to keep the belts taut. The sensitizing weight is set so that this whole upper system is as sensitive as possible. In fact, when the steel ribbon which connects the weighing mechanism with the recording mechanism is disconnected at its lower end, the large counterpoise and the sensitizing weights permit of such delicate adjustment that the whole upper system of levers is in stable equilibrium, and the pen will rest at any point where it is placed. The least change of load will then move the pen through its whole range of motion. The record drum encloses an eight-day clock which causes it to make nearly a complete revolution in seven days. The pen, pen-arm, journal and bracket were made by Julien P. Friez & Sons, Baltimore, Md. The record chart was designed by the writer. It is ruled with curved lines coinciding with the sweep of the pen, and corresponds to the 24 hours of the day. Horizontal parallel lines traverse the paper and each line corresponds with one pound change in load.



Colony of bees on recording scale

The recording scale is mounted upon a solid, one-piece, concrete base and is sheltered in a substantially built house patterned after the regulation weather observation shelters of the U. S. Weather Bureau. Not only can the sides of the house be removed at will more nearly to place the bee colony which is under observation, under more normal apiary conditions, but the concrete base on which the house stands contains a wing or projection out in front so that the scale can, at the option of the observer, be rolled out from under the roof and into the full light of the sun without the least jarring or shaking of the hive.

# IT PAYS TO PROTECT BEES, EVEN IN OPEN WINTERS

By J. H. Merrill, Apiarist, Kansas State Agricultural College and Experiment Station

As has been previously reported in the American Bee Journal and the Journal of Economic Entomology, an experiment has been going on at the Kansas State Agricultural College for several years to determine the best method of wintering bees. In previous reports it has been shown that a two-story hive is preferable to a one-story hive for wintering, that a windbreak is very valuable, and that the expense of packing hives is more than offset by the resulting increased strength of the colonies.

In this experiment there are two sets of hives—one set placed in the open and the other sheltered by a windbreak of shrubbery. Each set consists of one one-story unpacked hive, one two-story unpacked hive, and one two-story hive packed with leaves. In the fall of the year the number of bees in each hive and the amount of honey in each are ascertained by a system of weighing. In the spring of the year they are weighed again to determine how much honey has been consumed during the winter, and also to determine whether each hive has gained or lost in its number of bees. The winter of 1920 was such an open winter that the remark "There was no need to pack this winter because the bees had so many chances to fly" was frequently heard. Consequently, the results of the spring weighing were looked forward to with more than ordinary interest, as they would either prove or disprove the above quoted statements.

In the fall of 1920, when the hives were left for the winter, the one-story unpacked hive, unprotected by a windbreak, had 41,458 bees. On May 17, 1921, the spring weighing showed that this hive had only 16,100 bees, or 25,358 less than it had in the fall.

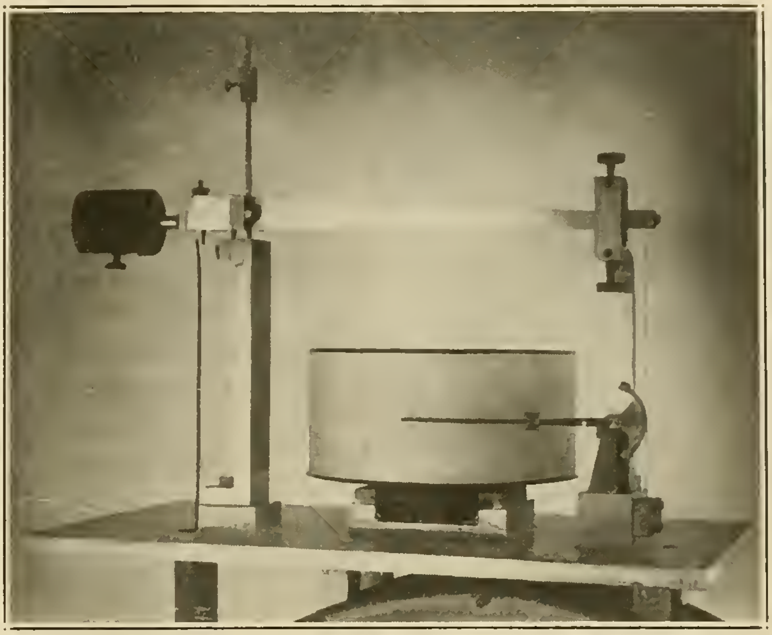
The one-story unpacked hive, which was protected by a windbreak, had 35,625 bees in the fall and 26,825 bees in the spring, or a loss of 8,800. It will be noted that the loss of the protected hive was only about one-third as great as the loss in the hive which was not protected by a windbreak.

The two-story unpacked hive, unprotected by a windbreak, had 42,375 bees in the fall, and 40,850 in the spring, or a loss of 1,525. The two-story unpacked hive which was protected by a windbreak, was one of the weakest colonies in the fall, having only 17,184 bees in the fall, but in the spring it has 21,213, showing a gain of 4,029. It will be noted here that the colony in the windbreak wintered better than the corresponding colony in the open, and the superiority of the two-story hive over the one-story hive for wintering is very plainly shown.

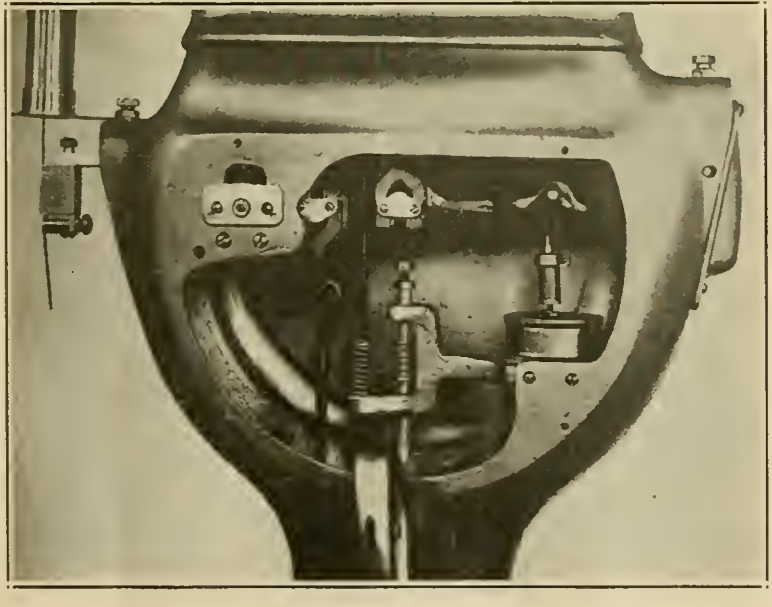
The hive in the packing case, which was in the open was blown over during a heavy wind and so seriously injured that it cannot be considered in these results. However, the packed hive in the windbreak very plainly shows whether or not packing paid. It had only 26,250 bees in the fall, but when the spring weighing was made it was found that there were 73,825 bees in the hive, or a gain of 47,575 bees.

The results obtained from the packed hive showed that the packing was more valuable during the open winter of 1920 than it had been during any of the four years during which this experiment has been carried on.

The continuation of the evidence showing the value of a windbreak, plenty of stores, and the superiority of the two-story hive over the one-story hive, indicates that those are all valuable factors to be considered in wintering bees.



The recording mechanism which makes a record of the change in weight



The internal mechanism of the scale

## THE HONEYBEE AND COLOR VISION

By Geo. D. Shafer

Does the honeybee possess color vision? In substance this question has been asked many times by many people—by practical beekeepers, by botanists, by zoologists, and by physiologists. Some have answered "yes" to the question; others have answered "no," and others still are of the opinion that neither answer has yet been made with certainty—with evidence that is quite convincing. It might be supposed that this question would be of first interest to the beekeeper, the zoologist, or the physiologist, but it seems to have been a botanist who really published the first answer. Chr. K. Sprengle, in 1793, expressed the view that the insect is allured from afar by the color of the whole flower, and when it comes close to the flower, that color stripes and flecks of color on the petals or other parts show the insect the way to the "honey container" or nectary. Eighty years later (1873) Herman Muller said that under similar conditions one kind of flower was visited the more often by insects the more pleasing it was to them. He believed the flower perfume was a strong means of attraction, but he emphasized that insects show a preference for colored flowers. But it was not until 1876, when Darwin gave the weight of his great influence (and that of his experiments with bees on Lobelia) to this answer, that it actually attracted much attention and began to obtain wide acceptance. In 1883 Lubbock published experiments which he thought tended to show that bees prefer blue to other colors. Thus gradually developed the notion that insects (especially bees) can see at a distance, that they perceive color, and that they show color preference.

From 1793 down to the present time at least a score and a half of workers have given important evidence for or against these notions. Most prominent among those in opposition was Plateau, who published papers between 1895 and 1907. Kellogg in his book on "American Insects" (page 581) said that Plateau's publications had made it "necessary for more experiments to be devised in support of the theory that floral adaptation of color is due to color preferences of insect visitors." Plateau's papers did start the work of gathering evidence in regard to color vision in insects—especially in case of the honey bee—all over again. Most recent in this country is the work of J. H. Lovell and C. H. Turner. In Europe the works of Wendt, Forel, Exner, Andrae, Buttel-Reepens, and many others might be mentioned—and finally, the work of K. Von Frisch and C. Hess. In 1914 Von Frisch presented a paper and made certain demonstrations before a Zoological Society of Freiburg, where he succeeded in convincing his audience, by demonstrations, that fish distinguish color, and that honeybees can distinguish color. Von Frisch had fed fish, kept in a glass aquarium, for many days on yellow food. Then when he pasted a small bit of yellow paper upon any shade of gray or among other bits of blue, red or green paper, and caused this to approach close against the side of the glass aquarium, the fish (trained to eat yellow food) darted toward the bit of yellow paper, but not toward that of any other color—according to the report. Similarly he showed that other fish, trained to eat red food, seemed to recognize red. His demonstration with bees was as follows: On a table he arranged a series of fifteen gray papers which led in gradual, continuous gradation from white to black. In a chosen place a blue paper of similar size to the others was inserted in the gray series. Over all the papers a thick glass plate was laid, and on this plate, above each paper, a little watch glass was set; but only that watch glass above the blue paper was filled with sugar syrup. The table was exposed where the bees came in numbers, after a time, to get the syrup. Finally, after periods of about twenty minutes, when the bees had emptied the watch glass above the blue paper, it was refilled, and each time the position of the blue paper was changed in the gray series in order to avoid having the bees become accustomed to getting the syrup in a definite place in the series. The bees had been trained thus for two days when the demonstration was made. On the day of the demonstration, a new series of clean papers was arranged under the glass plate with the blue paper in a new position from that of the last feeding. Above each paper (even above the blue this time) a clean, empty watch glass was placed and the table then exposed to the bees. It was reported that the bees flew at once toward the watch glass above the blue paper and alighted upon it. Also, it is reported that (when the table was removed) bees, seeking nourishment, flew toward those spectators who had blue cravats or blue hat bands.

Opposed to this experiment with bees which Von Frisch demonstrated, Carl Hess has urged especially the following experiment: Bees were trained to take syrup from a glass placed above blue paper. Then, having prepared a spectrum made up of 158 different contiguous strips of colored paper, the whole was covered with a plate glass. Hess says that he then drew a long, narrow streak of syrup from end to end over the glass plate above the spectrum of colors, and exposed this to the bees. If now the bees would pay especial attention to color rather than to odor of food, he says they should have alighted at first in numbers only above the blue portion of the spectrum. Instead of doing so, however, he reports that they flew to the food regardlessly, now above this and now above that color of the spectrum, and so alighted everywhere upon the food.

Thus Hess, in his latest paper (1918) maintains that bees do not perceive color at all, and he bases his conclusions in regard to color blindness in the honeybee upon experiments which may be classified under three headings: I. Spectrum experiments. II. Tests with colored lights of varying intensity. III. Training experiments. His spectrum experiments tend to establish the following points. First, within certain limits, confined bees always go toward the strongest light when suddenly exposed to a graded band of light through glass along the side of their container. Secondly, when bees confined in the dark in a long parallel sided container are suddenly exposed to the light of a prism spectrum thrown against the glass side or top of their container, they congregate in the yellow green to green portion of the spectrum—showing, as he concludes, that this portion of the spectrum seems brightest to them. Now it is well known that to a normal man, suddenly exposed to a bright spectrum in this way, the yellow portion of the spectrum seems brightest. On the other hand, to a totally color blind man the yellow green to green portion of the spectrum seems brightest—and Hess points out that in his tests it is the same with the bees as with the totally color blind man.

The experiments with colored lights of varying intensity tend to show, according to Hess, that it is the intensity of the light and not the color which attracts bees or causes them to show preference. By changing the intensity only (not the color) of the light to which confined bees were exposed, he says he could change "blue-loving" bees, for example, into "red-loving" bees, and then back again.

The "training experiments" of Hess were quite varied. For example, he used different colored pieces about hive entrances in such a manner that they might be quickly removed or changed, or covered with glass or not as he wished, and he claims that in all cases where it might seem that the bees acted as if they discerned difference in color, he was able to show that it was actually difference in intensity of light which guided the bees in some cases, or more often the sense of smell, and not really color in any case. Again, he exposed food to bees for weeks above a certain color, after which he arranged checker boards of different colors and checker boards of white and black which he could shift quickly under a sheet of plate glass upon which food was exposed (without disturbing the plate glass), and the "color trained" bees, he says, would take food as quickly above one color or one shade as above another. Finally, among other tests, he arranged the "paper strip spectrum and streak of syrup or honey" experiment

FROM THE
APIARY OF C. B. PALM
BRADSHAW. NEBRASKA.

Exhibit of C. B. Palmer, of Bradshaw, Neb., at a local fair.

which has already been described. This last experiment he seems to regard as the strongest of all his "training experiments" in answer to Von Frisch. No doubt it will appeal to many readers, however, that in Von Frisch's last demonstration, where no syrup at all was present above any color, the sense of smell of the bees was taken into better account while trying to determine whether they were influenced by color than in these tests of Hess where the final test was made with food present above the colors.

Both Lovell and Turner, in their recent work, reached the conclusion that bees are influenced in their outdoor activities by color, and that they exhibit color fidelity to flowers when gathering nectar. But Turner says that while he thinks his evidence shows that bees recognize color from a distance, he is not sure whether it is a true color vision or only a "grayness discrimination" which they recognize in different colors. Thus it would seem that the question has not yet been answered with conclusive evidence. Who will take into account the honeybee's sense of location, her sense of smell, her ability to distinguish between light intensities to some extent, and her possible recognition of form—and then gather decisive evidence to answer the question: "Does the honeybee possess color vision?"

California.

## THE FALSE INDIGO (Amorpha)

By Frank C. Pellett

There are several species of amorpha common to America, but the one which is probably of most importance to the beekeeper is the shrub commonly called "false indigo" or river locust (**Amorpha fruticosa**). It is also known as bastard indigo in some localities. It grows most commonly in damp, shady bottom lands and on the banks of streams. It is occasionally found in upland woodland borders where the soil is deep and rich.

It is from 5 to 8 feet in height under most conditions, but occasionally reaches a height of 15 to 18 feet. It is widely distributed, being found from New England, where it is rare, west to Minnesota and Saskatchewan and south to Florida and Mexico. In Colorado it is reported at altitudes of 4,000 feet in Logan County, and in the river flats east of Ft. Collins. In Texas it is found on the river banks, apparently throughout the State. In Alabama and Georgia it is common, as well as in the middle west. In the southern portion of its range, the flowers appear in April and May, while in the northern regions it blooms as late as July. In Nebraska and Kansas, where it is of greatest importance to the bees, the blooming season is early June or late May. The flowers are deep blue or purple, and are borne in long spike-like racemes, as shown in the illustration. In the Arkansas Valley in Kansas, beekeepers report that it yields both nectar and pollen in abundance. Nebraska beekeepers value it, since it fills the gap between fruit bloom and white clover.

The lead plant or shoestring, (**Amorpha canescens**), also known as wild tea, is a bushy shrub 1 to 3 feet high, which is very common on the plains from Manitoba to Texas and New Mexico. The flowers are very similar to the false indigo and the blooming period is in mid-summer. The name, lead plant, comes from its color. There is a common saying among farmers in Nebraska that where the shoestring is found alfalfa will succeed. Although beekeepers report that the bees work on the shoestring or lead plant, it apparently is not of great value, even on the prairies, where it is common.

The false indigo in bloom.

In addition to the above species there is the dwarf false indigo (**Amorpha nana**),which is found from Manitoba to Iowa, Nebraska, Colorado and New Mexico. This little shrub, growing on the open prairie, is seldom more than one foot in height. The smooth amorpha (**Amorpha glabra**), is found along the coast from North Carolina to Florida.

There is one representative of the group on the Pacific Coast, the California false indigo (**Amorpha californica**). This species is found in Southern California, Arizona, New Mexico and also in Mexico.

Although, as will be seen from the above description, the group is widely distributed, the writer has not been able to find any localities outside the States of Nebraska and Kansas where it is of special importance to the beekeeper.

## THE HONEYBEE IN MEDICINE

By Dr. Ransom A. Race

A number of articles have appeared lately in the American Bee Journal on the use of the poison of the honeybee for the benefit of rheumatic conditions. It may be of interest to many to know that the honeybee has, for many years, been a great blessing to people afflicted with various ailments, as well as those suffering with so-called rheumatism.

The first account of the proving of apis, that I can find, was by Dr. A. R. Morgan, of Syracuse, N. Y., in August, 1858, and again in September, 1859, an account of which was printed in the transactions of the New York State Homeopathic Medical Society, Vol. 3, 1865, page 104. Since then many provings have been made by others, and verified in clinical use, until today the symptomatology of Apis mellifica is complete and extensive.

As first prepared, the live bees were put in a bottle, which was well shaken to irritate them. Five times their weight of dilute alcohol was poured upon them. The whole was allowed to remain eight days, being shaken twice a day. The tincture was then poured off, strained and filtered. This tincture was used for a number of years before the drug known as "Apium virus" was introduced by Dr. Constantine Hering, of Philadelphia, Pa.

Apium virus is prepared by drawing out the sting and poison sac from a freshly-killed bee. Taking hold of the sac, insert the point of the sting into a small glass tube, and squeeze the poison into it; or, take a live bee and allow it to seize a small lump of sugar; pinch the bee and it will immediately sting into the sugar, which will absorb the poison. Repeat the process until enough is obtained to start a tincture, or, if sugar is used, to start a trituration. These drugs are kept in stock, in various strengths, by all homeopathic pharmacies.

The symptomatology of Apis mellifica and Apium virus is almost identical, so for convenience in writing only one will be mentioned.

The action of the drug on the human organism is the same if taken by mouth, or if injected by hypodermic needle (stinging bee), although its action is quicker when the injection method is used, but the time saved is so little that the great majority would prefer to have the drug administered by mouth in preference to the stinging method of the bee.

Many cases of rheumatism have been greatly improved, if not cured, by the use of apis, but the case of rheumatism must be selected to correspond to drug symptomatology, the same as in treating any other disease. Not all cases of rheumatism are alike, nor will one drug prove a cure for all cases of rheumatism. The variety of rheumatic conditions in which apis is of benefit, are all accompanied by sharp, stinging pains throughout the affected part, associated, also, with a sensation of numbness and coldness, with swelling and tenderness. Unless these symptoms are present, do not expect apis to do much good.

In dropsical conditions accompanying almost any disease, especially in effusions affecting the lower lids of the eyes, apis is very efficacious, when you have associated with the effusions these sharp, stinging pains.

In skin affections apis is very often a great help, when associated with these same sharp, stinging pains, in fact, these pains are present in nearly all condition for which apis is of use, and they form one of the great "keynote" symptoms calling for its administration.

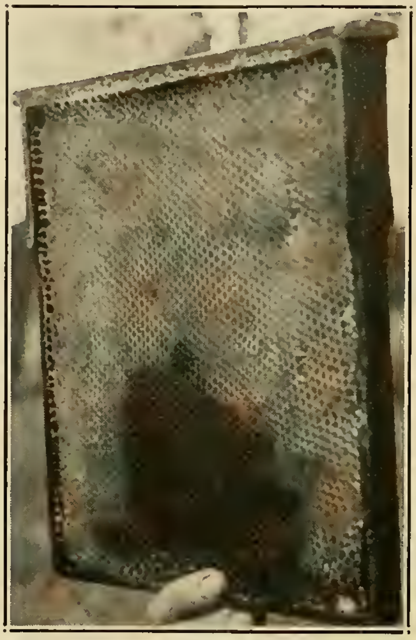
Apis acts specifically upon the cellular tissues, giving as its most characteristic effect, an acute oedema, both of the skin and the mucous membrane. It also affects the serous membrane, producing conditions similar to those which are the products of serous inflammations, such as hydrocephalus, hydrothorax, ascites, etc. In fact, its effects are noted in nearly every organ or part of the body.

One could enumerate many conditions in which apis would be of great benefit, but it is unnecessary in an article of this kind, as I only wished to show that apis is a very useful drug in the treatment of the sick, that it has been in use by physicians for many years, and, that one to derive benefit from it does not have to submit to the hypodermic injection of the drug as applied by our little friends, the bees.

Massachusetts.

## ORIGINAL HOFFMAN FRAME

The Hoffman frame has come into such general use in the Langstroth hive that few beekeepers are unfamiliar with it. However, the frame as made by Mr. Hoffman was of another size entirely, as will be seen by the illustration shown herewith. Recently the associate editor enjoyed the privilege of a short visit to the old home of the Hoffman family, where the wife and daughter still reside, and continue in the business of beekeeping. They still have the same hives used by Julius Hoffman during his lifetime. The frame he used was 12 inches deep with a top bar 12 inches long. The comb is accordingly not quite as wide as it is deep. It will be noticed, also, that the peculiar spacing feature now in general use on the end bar was used on the top bar also. It was the self-spacing feature that distinguished the Hoffman frame from others in common use.



Original Hoffman frame, made by Julius Hoffman

## UNEDITED LETTERS OF HUBER

### (Continued from October)

### Gentleness of Bees

To Miss Elisa De Portes

Lausanne, May 15, 1828.

Your mother, my dear Elisa, does not disapprove that I should interest you with the subject of my favorite studies, those good bees which have diverted me from the inseparable sorrows of humanity and have done me so much essential good that they will surely do for you what they did for me, if you are in need of it, and surely will do you no harm. Be it so!

I should like to see bees about you and to think that they will sometimes remind you of the friend who has had so much to do with them. The first and only word that I wish to say to you about them today is not to consider them as formidable as is generally believed; it is a truth proven by me through a half century of observations and which the most simple reasoning might have taught us.

If the bees, the wasps, the humblebees and all the beings that are provided with stings had received from nature an offensive instinct or hostile dispositions, in view of their prodigious number, the wings with which they have been provided and the speed of their flight, the earth would be uninhabitable for us and for all animals.

If chance had presided at this part of creation, such a condition might have obtained, but it is to a Father, to a true Father, that we owe our existence. He has also thought of the happiness of his children, otherwise the bees, instead of being a blessing would be but a curse to us and the treasure that they could bestow upon us would have been a dead loss: their wax and their honey would have cost us too high a price.

If truly fearful weapons have been given to the bees and other insects of their kind, it is uniquely for their defense, to preserve that which is dearest to them—their queen, their young, their companions or their sisters, and their treasures, against the attacks of numerous enemies. When you have given this some thought, kind Elisa, and will believe a friend who has not the least desire to see you struggling against the poisoned dart of the bees, I will advise you, and your mother will permit you to observe my favorites in a glass hive. One finds beautiful lessons in the study of natural history and especially in that of the beings which I have most studied.

Constant obedience to the laws which have been imposed upon them, and the happiness which results from it are a spectacle of the highest interest for us. If wisdom is without merit when it is compulsory, it is a great merit for the bees that we be compelled to seek the Law-maker and see Him in His works.

A thousand caresses for you and yours, my beloved Elisa.

### TO THE SAME

### The Sting of the Bees Has Been Given Them for Their Defense—Lizard Killed in a Hive—The Odor of the Sting Irritates the Bees.

Lausanne, May 17, 1828.

You do not believe, dear Elisa, that those bees which I desire you to love have invented the laws which rule them. I ended my last letter in telling you what you must believe as I do; that it is to the supreme Lawmaker that our admiration is due, as well as our love and our gratitude, for He has evidently thought of the existence and the well-being of creatures which, like ourselves, have no means of defending themselves against the attacks of those who are constantly provided with a sting accompanied with mortal poison. What would be our fate, if we could not walk about our gardens without being in risk of attack and pursuit from thousands of winged and wicked beings?

Let us see what has been done for those bees, which are, also, his children, by this best of Fathers. If attack has been forbidden them, they have been ordered to defend themselves; do they then have enemies? A very large number of insects and reptiles plot against their treasures and try, through robbery, to enter their homes. Others try to enter there, to deposit upon their combs eggs which will find there the only food that they need. Since it is every day and at every hour of the good season that the bees are in danger of the invasion of so many enemies, preserving Providence demands of them a sustained watching, very wonderful for the brains of a fly, a supervision in every moment which is worthy of admiration.

I tell you this because I have seen it, not with my own eyes, but through the help of those who have put theirs to my service, and upon whom it has been necessary for me to rely; this observation has been the first one of all those that I have made. I already knew, through others and especially through the eminent Reamur, the fine order which reigns in the bee hives, but I ignored entirely when and how this order could be disturbed; chance taught it to me.

One day we were expecting a swarm to issue; I had stationed myself near the hive which was to swarm.

It was a great glass bell, sheltered from light which would disturb the bees, with a veil that could be removed—just as you remove your own—so that we might see what took place within the hive without causing any noise or jars that might alarm them. It was warm that day, drowsiness overtook me and I went to sleep, with my head resting against the hive which I had undertaken to watch. Suddenly I was awakened by a noise coming from the hive and which appeared to me much greater than the humming that one always hears in the habitations of the bees and which is usually very soft. I rang for Burnens, to seek its cause. Great was our surprise when, after having lifted the veil, we saw, on the bottom board of the hive, a fine and big green lizard, lying on its back and slain with violence, as you will soon see. Near its dead body some thirty dead bees were also lying. Had they been killed by him in defending himself? This was our first impression; but we soon altered it when we saw, driven into the belly of the lizard, all the stings of the bees which had put him to death by sacrificing their own lives for the safety of the household.

Paley says, in his "Physical Theology," that one finds in the insects the models of useful instruments. One finds there also, dear Elisa, beautiful examples to imitate. Is not death in defense of one's country the first and most honorable of our duties? The ancients who did not disregard this, wrote in their beautiful Roman language:

"Dolce et decorum est pro patria mori." (It is sweet and beautiful to die for one's country.)

My sleepiness had not permitted me to see the first act of this tragedy; but other examples of a similar occurrence, noticed in similar circumstances, enable me to tell you without hesitancy what had evidently happened.

The beauty of the weather and of the expected harvest had evidently attracted a third, or perhaps a half, of the workers to the blossoms; those which other cares retained in the hive were probably thinking about the proposed founding of a new home, and perhaps did not, as usual, watch the entrance of the hive against enemies and keep a sufficient guard there.

The lizard was thus able to enter without finding great opposition. He was perhaps lucky enough to eat a few of the sentinels in passing, but it was not with impunity. In case of an attack, general or individual, the rustle of the workers, caused by the rapid buzzing of their wings, produces a sound which may be termed a danger call.

This call, with which I am acquainted, and which I can readily distinguish from any other, is, you may believe, still better perceived by the bees. This buzzing finds an echo in all parts of the hive; when they are made of glass it is as easy to see as to hear it. It is therefore thus that they transmit advice of any danger which threatens them and the request to be on their guard in any part of the home. If the signal which announces danger to them has but the duration of lightning, its effects are truly equal to those of a thunder-bolt.

Worker-bees in sufficient number, and doubtless in proportion to the strength of the enemy, rush upon them and at once put them "hors de combat." We know by our own experience that their death must be as painful as it is prompt.

The bite of the viper, so dangerous, is not at all to be feared when its venom has been drained by repeated biting. That which renders the venom of the bees so painful for us and so deadly for their natural enemies is also the presence, at the end of the two spears which compose the sting, of a bright drop of poison which shows itself on its forward point.

At the will of the irritated bee, the venom is carried, or rather forced, into the body of the enemy and causes its almost instantaneous death, for from the poison sack, located at the root of the sting, the poison has but a short space to travel towards its extremity in order to reach the full depth of the wound which the two spears have produced.

You now know what happened to the lizard of which I wrote a minute ago and how the bees get rid of usurpers. Will you now, my dear girl, take a few steps more with your friend? Please follow the thread which he has put in your hands, in order to help you out of the labyrinth in which you are now engaged, with him.

The hives which are governed by a young and fertile queen and are filled with a numerous population are but little in danger of invasions; I have seen some that did not have to repulse a single attack or need to avenge a single insult during the entire year of existence; I say insults to avenge, because I must acknowledge that my cherished bees are decidedly vindictive; it is their failing and I must not conceal it from you.

One day I ran the risk of testing this myself; having caused a hive to be raised from its bottom to cleanse the latter, the person who was doing this for me probably touched and wounded a few workers. I heard the danger call; some hundreds of workers answered it, rushed out of the hive and upon me; my clothing and the promptness of my flight permitted me to reach the house without being stung. Remember my blindness and think of how little I could have done in my own defense at so critical a moment. Certainly I had to be thankful, and I feel so yet.

The greater number of the bees that had rushed at me returned home, but three or four remained which did all in their power to enter the parlor in which I had taken refuge, by flying against the windows and keeping it up for half an hour with a very remarkable fierceness. When I thought they had withdrawn and imagined I could go safely out of my retreat, one of the most furious workers threw herself upon the person who had taken my arm, stung him miserably under the eye and died herself, leaving in the wound her sting and her entrails. I have often seen their resentment prolonged a much longer time.

Whenever my gardener was raking too near the hives, the workers that rested upon the ground, killed or wounded by the rake, were soon avenged. The danger call was heard within the hives; the gardener was often punished for his clumsiness.

During the two or three days following such excitement, no one could approach the apiary without suffering the effects of the offended bees' rancour. Those that had followed me with the fierceness of which I wrote, would stop sometimes long enough on the panes of the window to enable one to distinctly see the end of their abdomen; and the bright drops of poison on the end of their stings indicated that they had been drawn and poisoned for my benefit.

If the primary cause of their anger was not always noted by us, it was perhaps not so difficult to understand their prolonged anger. The cause was probably entirely natural.

My first thought was that the presence of the escaped poison, its odor probably perceived by the bees, might have an irritating action upon some of their organs. An experiment was to prove it to us; here is what I devised:

We introduced a few bees in a tube of small diameter, the length of which did not exceed 6 inches, its lower opening was hermetically closed, the other could be closed with the finger or in some other manner.

In order that the bees might give this tube the odor of poison, they were slightly disturbed with a straw or the stem of a flower. Then the opening of the tube was presented at the entrance of a hive, after having uncovered it. The effect was immediate; a few bees came out of the hive at once and threw themselves upon us. We would have been stung, undoubtedly, if a veil, some gloves and a good hood had not protected us from their anger.

(To be Continued)

## EDITOR OF BRITISH BEE JOURNAL

Among the British bee magazines, the British Bee Journal is best known in this country. It is a weekly publication now in its 49th volume. It has a companion publication in the Beekeeper's Record, which is a monthly in its 39th volume. Both publications are edited by Thos. W. Cowan and J. Herrod-Hempsall. Mr. Herrod-Hempsall is at present the active editor of both publications, and we are showing his photo on this page in order to give our readers an opportunity to get better acquainted with our fellow craftsman across the water.

## SWARMING

### A Study in Bee Behavior

By Sol. L. Skoss

The study of the behavior of bees under the swarming impulse is both interesting and important to every progressive beekeeper. Its importance is best illustrated by the late Dr. C. C. Miller's statement (Fifty Years among the Bees P. 151), "If I were to meet a man perfect in the entire science and art of beekeeping, and were allowed from him an answer to just one question, I would ask for the best and easiest way to prevent swarming, for one who is anxious to secure the largest crop of comb honey."

Swarming has been carefully studdied by various investigators, as well as by many practical beekeepers, for several years. Different theories have been advanced as to its fundamental causes, yet this question is far from being settled. Lack of sufficient ventilation during hot weather, the queen being crowded for space, peculiar conditions of certain localities and seasons are, after all, only contributory causes, which, important as they are in augmenting and promoting the swarming fever, could hardly be considered more than conditions favoring the tendency of swarming.

TheRussian beekeepers hold as a general cause of swarming, the natural tendency of bees, as of many other insects of their class, to form new colonies in that way. Just as the old worn out bees are being constantly supplanted under favorable conditions by young bees emerging from the cells, so are the old families headed by old queens being supplanted by new families and young queens taking the place of their mothers. It is just the natural law of reproduction and of propagation of the species applied to whole colonies, a kind of community reproduction in the same sense as individual reproduction. To quote Frank C. Pellett (Productive Beekeeping, P. 100), "It should be remembered that with bees and other social insects the community is the unit, rather than the individual. The workers are incapable of reproduction, and accordingly no matter how great an increase there may be in their number in the hive, it is but temporary, and makes no permanent difference in perpetuation of the species. Swarming is then the expression of the instinct of procreation or increase."

Of course, one can frequently observe in the same apiary a large percentage of colonies that pass through the entire season without making any attempt to swarm at all. But then the procreative instinct is not developed with all communities, as with all individuals, alike. Besides, there are many special causes which diminish and control the swarming tendency among the bees, as old crippled bees, weak colonies, young queens, etc.

According to the opinion of the German investigator, Gerstung (quoted by Dr. Phillips, Beekeeping, 1915, page 79), swarming is caused by undue proportion of nurse bees to the young brood they have to feed with larval food, or royal jelly. The hive is full of capped brood before swarming, but very little of young larvæ or eggs are found there at that time. The presence of an excessive quantity of larval food induces the bees to build queen cells and rear queens by the surplus food. W. Z. Hutchinson (Advanced Bee Culture, 5th edition, page 64) and E. R. Root (A. B. C. and X. Y. Z. of Bee Culture, 1920, article "Swarming") are inclined to accept this theory as the prime cause of swarming.

J. Herrod Hempsall

While this preponderance of nurse bees in the brood chamber is a general condition in all colonies shortly before swarming, it could hardly be considered more than one of its chief notable symptoms, on the same order as the invariable procedure of a swarming colony to construct drone comb, depositing drone eggs, and building queen cells. All these symptoms will be manifested in various regions and in different seasons in accordance with the special conditions of the honey flow, favoring the rapid increase of the population of the hive, which in its turn tends to develop the procreative instinct of the community as a whole. The fact that a colony could be induced to give up swarming by taking away all young brood and substituting for same empty combs would indicate that excess of larval food is not the prime cause of swarming, since in this case the food would immediately be increased instead of being diminished (Demuth quoted in above-mentioned article on "Swarming").

So far the question of the fundamental cause of swarming is far from being definitely solved. Unfortunately, too little attention has been paid by serious investigators to this important phase of bee behavior. While the practical beekeeper sought to devise various methods for controlling swarming by removing for the time being the contributory causes which tend to develop the swarming fever, he did very little to find out the prime cause of this phenomenon.

Numerous methods have been employed for the prevention of swarming. Root, in his article on swarming (A. B. C. and X. Y. Z. of Bee Culture, 1920) sums them up into 12 different methods, whereas some Russian text books quote as many as twenty methods for swarm control. However, to all of them would apply Demuth's conclusion, that "any manipulation for swarm control, whether applied after the colony has acquired the swarming fever or applied to all colonies alike previous to the swarming season, is based upon the single principle—a temporary disturbance in the continuity of the daily emergence of brood. This disturbance should occur just previous to or during the swarming season (Demuth, Comb Honey, 1917, Farmers' Bulletin 505, p. 34).

Swarming season varies greatly, according to climatic conditions of different regions, but May and June could generally be considered as swarming months, while in the South swarming begins somewhat earlier.

The procedure of swarming itself is so beautifully depicted by Langstroth, Cheshire, Maeterlink and others, that I shall give here only a brief description, with due regard to the behavior of bees during the process of swarming.

When the flow of nectar is coming in pretty regularly, brood rearing being thereby greatly stimulated, our bee community becomes very populous. The provident bees start to build drone comb and the queen deposits drone eggs therein.

Queen cells are started before the maturing of the drones in their cells. The number of queen cells are rarely less than three or more than thirty, although a beekeeper from Palestine told me that fifty to a hundred queen cells built under the swarming impulse is a frequent occurrence with their native bees. When the cells have already been capped, we may expect swarming any fair warm day.

The following table made by the Russian beekeeper, Butkewitch (Butkewitch, Manual of Beekeeping (Russian), St. Petersburg, 1911), may be of some value to the practical beekeeper:

| From Stages of Development of Queen Cells | Number of Days | |
|---|---|---|
| | To prime Swarm | To after Swarm |
| From the depositing of an egg in queen cell | 10 | 18 |
| From the appearance of young larva | 7 | 15 |
| From the sealing of the cell | 2 | 10 |
| Issuing of prime swarm | 0 | 8 |
| From the "piping" of the virgins | | 1 |

The bees do not entirely suspend their work on the day they intend to leave their hive. I frequently observed colonies where the bees were going on with gathering nectar in the morning about the same as usual, yet they swarmed in the afternoon. Neither do the clusters hanging outside the hives invariably signify that those particular colonies are preparing to swarm. Such "hanging out" is probably in most cases due to hot weather and to lack of ventilation.

The colony is often unusually quiet before the swarm is to issue, reminding one of the quietude of the weather before the coming storm. The first signs of excitement are frequently revealed by the queen, who seems to be very restless on the day she is to leave. Instead of her regular routine of work of laying eggs, she is somewhat agitated, aimlessly running around over the combs. Soon the whole colony is in an uproar. Several bees fly and dance in the air in front of the hive with their heads toward it, as though anticipating the coming rush. Yet in the midst of their great agitation they do not forget to provide themselves with a good supply of honey to last them for a few days.

Meanwhile the commotion in the hive is growing very rapidly. Young and old are literally "pouring out" of the hive, as though some mysterious force is relentlessly driving them from their old home. They rush onward as fast as they can, tending to go upward, take wing, and begin to gyrate rythmically, at first around the hive, then extending the area of their merry-making larger and larger until it occupies a large portion of the apiary. There is something elemental in the whole procedure. They seem to abandon themselves completely to their hilarious joy, ringing their wings in great excitement, with a certain rhythm in all their motions.

There is no set rule when the queen leaves the hive. The idea that she leads the swarm is erroneous, for she frequently leaves the hive when about a third or a half of the emigrants are out. She sometimes falls to the ground in her attempt to take wing together with the madly rushing bees, being heavily loaded with eggs and probably dazzled by the bright light of the sun. After a short rest in front of the hive she is up again in the air among her family.

The number of bees participating in a swarm is estimated variously. The Russian beekeepers consider a good prime swarm at six to seven pounds, which quantity coincides with Dr. Phillips' estimate of 35,000 (Beekeeping, 1915, p. 39), considering about 5,000 bees to the pound.

The old idea that all kinds of noise made while the swarm is in the air would induce it to settle is disproved by modern investigators, although Cheshire thinks that there is some truth in it, and on the whole it is correct. It was also probably done in order to inform the neighbors about the issuance of a swarm and thus sustain its ownership. Langstroth reports that flashing the rays of the sun by means of a mirror would make it settle, while many old beekeepers used to throw mud or water for the same purpose, as well as for preventing the joining of two or more swarms together.

Bees, participating in the swarm, being filled with honey are not apt to sting. Yet the general idea among the beekeepers that they **will never sting** is probably wrong, because they do sting under provocation, even while swarming.

But here our merry-makers in the air, after whirling in large circles and dancing for a while, begin to settle in a cluster not very far from their old home. The old queen, heavy with eggs, weak and not used to light and flying, cannot ordinarily make a long flight without first resting, and wherever she alights, the bees cluster with her. Frequently she alights on a spot where some bees have been clustering previous to her arrival.

The wind seems to have a great deal to do with the direction in which a swarm flies. The apiary where I had the opportunity to study swarming last year had a windbreak of eucalyptus trees, the hives being situated, of course, on the side from the wind, where its force was broken by the trees. On the other side of the apiary was an alfalfa field in which direction the wind was blowing. Out of fifty cases of swarming that I witnessed there, not a single one alighted on a tree, most of them settling right on the ground in the alfalfa, while many got into the empty hives that were spread in windward direction for that purpose, notwithstanding the fact that swarming took place on very quiet, bright sunny days.

Something has probably to do with the fact that bees have a peculiar way of settling on same spots where previous swarms have selected to alight. It is explained by beekeepers that a swarm leaves a special odor at the place where it clustered, and other swarms are thereby attracted to the same place. Some Russian beekeepers think the odor of the queen attracts the bees to the place where she once alighted.

It has also been observed that afterswarms frequently fly farther and settle on more elevated places than prime swarms. Young queens are more vigorous and not as heavy as their mother, therefore they can perform better flying feats than the former.

Now that the swarm has settled in a cluster, scouts are sent out to look for a new home. Whether the scouts depart before the swarm leaves the parent hive or shortly thereafter is rather difficult to determine. There happened cases where emigrants left their hive and went straight in an air line to a new home without ever stopping to cluster. More often, however, they clustered for a length of time, from fifteen minutes to perhaps a day or more, until they depart for a new home.

When they get to their new home, a number of the first comers stand on the alighting board and on the walls of the hive with abdomens lifted in the air and fan with their wings. This is probably their mode of notifying the bees left behind them of the new home they located. Soon they begin their steady, uninterrupted march homeward, if the queen is with them.

They settle to work presently without much loss of time. They form a curtain-like cluster and begin to build comb. There is not even a trace of that elemental, hilarious joy to which they have abandoned themselves completely just a short while ago. They

Rucher De J.O. Levac Rigaud P.Q.

Apiary of J. G. Levac, of Quebec, Canada. As high as 27,500 pounds from 180 colonies have been secured, or 150 pounds per colony are now very actively engaged in a thorough house cleaning of their new home, mature bees bring in pollen and nectar, and the queen begins to lay eggs as soon as the younger bees have built enough of comb to receive stores and eggs therein.

To return now to the so-called "parent colony." It may or may not cast off an after swarm, much depending on the population of the bees left in the hive. Ordinarily the first young queen emerges from the cell in about eight days after the prime swarm left the hive. If no afterswarm is forthcoming, she may destroy her sisters in the remaining queen cells, the workers frequently tearing them open for that purpose. The virgin then runs restlessly around issuing some sharp notes, called by beekeepers as "piping," while her sisters in the cells answer her call, and are forthwith destroyed. She mates in about five or six days thereafter, and thus becomes the mother of a new colony.

California.

## A QUEEN INTRODUCING CAGE

By A. G. Tucker

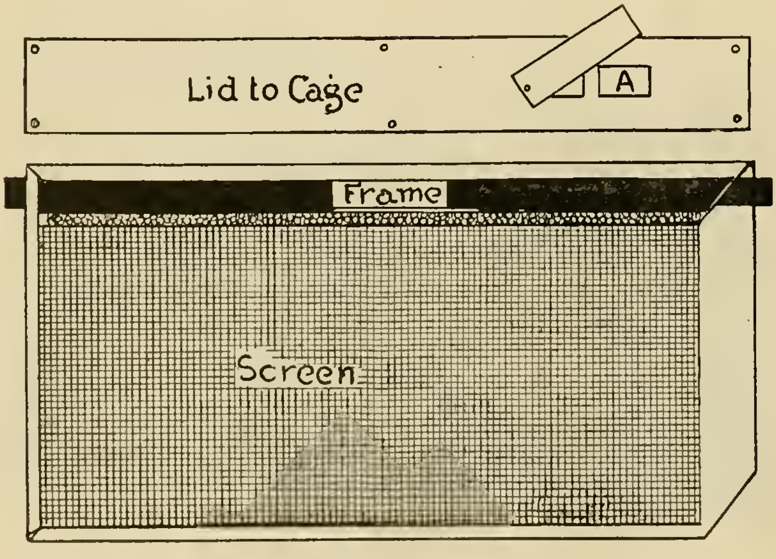
The accompanying drawing will give an idea of the cage I use for introducing queens. The cage is made of a size to hold an entire brood-comb and has screen sides and light wood or tin ends, bottom and top.

The queen is released as soon as received, on a frame of hatching brood, which is placed in the cage and all made tight so as to admit no bees. The cage is then placed in the hive, after removing two combs to make place for it, the old queen being left in the hive where she was.

In two days remove the old queen and replace the new queen with the frame of the brood back into the hive, removing the cage.

I find in the push-in-comb cage that the bees are apt to gnaw the comb and release the queen immediately. This is obviated by the present plan. The freshly-introduced queen gets the odor of the hive through the wire cloth, and is introduced to freshly-hatched bees at first. Occasional old bees can be admitted, if desired, through the slot, "A," in the cover.

California.



A safe introducing cage

## THE THOMPSON SAFETY INTRODUCING CAGE

By James McKee

In August "Gleanings," 1918, Mr. J. E. Thompson gave to the public a cage method that successfully introduced both day-old and laying queens in every instance during experimental tests.

I at once experimented with the new method and found it remarkably successful. I have used it ever since with great success, and I consider it the best method of queen introduction ever yet invented. I can introduce my most expensive queens in this way without fear of loss.

By this method the queen is actually introduced before she leaves the cage. The principle of the cage is as follows: Through a passage, filled with queen candy, about one inch long, over one end of which is nailed a piece of zinc queen excluder, the bees eat into the cage some time before the queen can be released by the bees eating through a longer passage, filled with queen candy, which must be three-quarters of an inch or more longer than the excluder passage.

California.

## THE ACARINE MITE

By McCowen Hall

I was greatly interested in Mr. Bruce White's article on the acarine mite, for under the microscope I have found this mite in old pollen, and it suggests itself that the mite has its origin in this old pollen something like the cheese mite. It may be that in old pollen-loaded combs we spread the disease, but then you would think that you would get it in America, which I suppose you do not, do you? I wrote to Mr. Bruce White on the matter and he was very interested and wrote me for further information.

You see that he says that the mite enters through one or both of the first pair of spiracular orifices and the transference of the mite to the bees would be very easy when they are clearing out the old pollen, would it not?

I have not always found it present and the other day only found broken parts and empty cases instead of the living mite.

England.

## AN AMERICAN OPINION

(The above letter was submitted to H. E. Ewing, the leading American authority on the mites, who replies as follows.)

Dear Mr. Pellett:

Your letter of Sept. 15. received, and inquiry in regard to the Tarsonemid of the honey bee noted. I have studied the Tarsonemid mites somewhat for several years and am familiar with the habits of practically all of our described species. They are for the most part plant feeders and suck the juices of plants, causing in some instances the leaves to fade, curl or die. They are quite commonly found about the bloom of flowers but not to the extent that they are found on the leaves. Some of our species are predaceous on other insects and one, **Pediculoides ventricosus,** attacks man, causing a severe dermatitis. This species normally feeds upon a great variety of insects.

In regard to the specific point raised by your English friend, I will state that I do not see any objections to this hypothesis. I have never seen the Tarsonemid of the honey bee and do not know as it has ever been found in this country. I have read with much interest the original papers by Rennie, White and Harvey, as well as the articles in your Bee Journal.

I am of the opinion that much remains to be proven in regard to the biology of the mite at least. These workers are, however, to be congratulated on their very important discovery in regard to the honey bee Tarsonemid.

H. E. Ewing.

## THE LEWIS TREATMENT FOR EUROPEAN FOULBROOD

By W. J. Sheppard

With the approval of the Department of Agriculture, the Apiary Inspectors of British Columbia have spent considerable time during the season of 1921 in testing the efficiency of what is known as the Lewis treatment for European foulbrood. Mr. W. H. Lewis, of Edmonds, B. C., who made many experiments in 1920, announced that he believed he had found a new remedy for this disease. Sufficient evidence has been obtained this year to show that if the conditions are favorable, that is, if the weather is warm enough so that the bees are flying freely, the antiseptic used (sodium hypochlorite) may be expected to check the disease sufficiently to enable the bees to clean it up.

The first experiments conducted by the inspectors this year were in the Fraser Valley, during the month of April. The weather then, with the exception of a few days, was wet and cold, and the bees inactive, and the results were not conclusive. Several things were found out at that time, however. The two proprietary antiseptic preparations, containing sodium hypochlorite, that were used, are known and sold as "B1K" (Bacilli-Kil") and "Fecto." The strength of the solution that was first tried was two ounces of B-K, or Fecto, to the imperial gallon of water. This was subsequently increased to four ounces. Mr. Lewis had suggested that it was possibly an advantage to add a little oil to the solution, which was also done. The plan followed was to shake the bees off the combs, which were then sprayed with a fine mist sprayer, so that the liquid would penetrate into each cell. The combs were then replaced in the hives as quickly as possible. It was not long before it was discovered that the solution killed all the eggs, but that the larvæ escaped injury; also, that it did not affect the bees adversely, but, on the other hand, acted as a great stimulus. After the spraying they quickly got to work cleaning up house, and the queens very soon started laying again.

There was considerable re-infection however at that period which, in all probability, was mainly due to the weather being too cold for the bees to fly freely, so that they were hindered in cleaning out the diseased cells and getting rid of any infection that was left. When the experiments were continued later it was found that a solution containing eight ounces of antiseptic to the imperial gallon of water gave better results and the following may be taken as a typical example of what then occurred:

June 1, 1921—Colony at Langley. European foulbrood. Very bad. At least 60 per cent of brood dead. Sprayed eight ounces of B-K to gallon of water, to which four teaspoonfuls of "3 in 1" oil added.

July 2—Colony cleaning up well. No new infection.

July 14—About 5 per cent new infection. Sprayed again, same strength as before.

July 29—100 per cent clean. No trace of European foulbrood. Full of brood from side to side, and storing honey well.

During the time these experiments were being carried out by the apiary inspectors in British Columbia, Mr. Arthur C. Miller, of Providence, R. I., who had had his attention called to the possibilities of the Lewis treatment, made up his mind to give it a trial.

His first report, which was received about the end of May, is as follows:

"One colony I treated with B1K, full strength, and while it killed some brood, they are now as clean as a hound' tooth." (Mr. Miller started off by using B-K at full strength to find out what dilution was necessary to avoid killing larvæ).

His second report arrived about the middle of June, in which he said:

"I have treated several complete apiaries, and the results are glorious. The virulent type of European foulbrood is worse than the others, or than American foulbrood. Combs with it are simply filthy and big colonies will not touch the job of cleaning up, but after a dose of B-K—what a change. They clean up with feverish haste, and the queen seems to outdo herself in egg production."

Mr. Miller's last report arrived about the middle of August. It is brief and emphatic. Summed up in five words, he says: "The Lewis cure **does** cure."

Mr. Miller states that sodium hypochlorite can be made as follows:

Dissolve two pounds of sal soda in two gallons of hot water, and one pound of chloride of lime in one gallon of cold water. Pour together and allow to settle. The clear solution is ready for use. Once in a while the mixed solutions fail to clear. If so, heat it and it will separate.

British Columbia.

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## TROUBLES WITH ORCHARD SPRAY IN THE NORTHWEST

By A. E. Burdick

No season ever opened more promising for a good crop of honey than the season nearly over. Early, the hives were full of bees amply supplied with honey, and I was a real optimist; but presto, along comes the codling moth and apple blossom time in Yakima. The orchard becomes enchanted, it is filled with exquisite bloom, sweet and fragrant, divinely planned to attract the bees, who are Cupid's fairies charged with no less a mission than the origin of life itself. "Man has sought out many inventions" and in his desire to destroy the codling moth provides Cupid with poisoned arrows (arsenate of lead) and friend and foe meet the common fate.

This is the price the bee men are paying, that the orchardist may have nice red apples. Along the shores of the Dead Sea, so I am informed, are the "apples of Sodom." They are very fair to look at, but rotten to the core. I have sometimes wished that all the apples that were made possible by my bees, and for whose fruition they gave up their lives, might become as the "apples of Sodom."

Orchardists are now using a cover crop in their orchards. This cover crop is usually alfalfa or vetch, which begins to bloom amount the 15th of June, and from that time on it remains a tangled mass of bloom. About every 10 days to two weeks, during the summer season, the trees, and incidentally the cover crop are given a fresh coat of arsenate of lead. In this way the larvæ of the codling moth as well as the bees are poisoned.

An injustice is being done. Our bees are necessary and are used to make fruitful the orchard and with that accomplished they are destroyed by their beneficiary.

An issue involving fundamental personal rights is at once apparent. Our bees are listed for taxation and thereby become property. No State can justly tax bees as property and withhold protection to the individual owner, to the use and enjoyment of that property.

The issue then is: Is there justification for the destruction of the apiarist's property by the orchardist?

The answer might be in the affirmative if it were necessary for the orchardist to do so in order to protect his property, but fortunately for the apiarist, it is not necessary or advisable to spray an orchard in full bloom, and the cover crop can be cut down before each spray, or some bee repellant, such as " Black Leaf 40," used with the arsenic, and in my opinion it is time the bee men insist on having their rights respected.

The view of the orchardist is illuminating. No Golden Rule involved. Here it is: "Keep your bees at home. They have no business over in my orchard. They are trespassers."

Certain abstruse and perplexing thoughts are thus aroused. Perhaps the status of the bees has not been defined by the laws. Perhaps they are neither wild nor domestic animals; but they are my property, a part of my business, which is recognized as legitimate and as a corollary the habits and activities of the bees are legitimate. If they are trespassers, I am conducting a thieving business and ought to be suppressed. Mr. Orchardist, you have missed nothing, they have not injured the orchard or cover crop; on the contrary they are your best friends. They are a paid-up insurance policy against loss from lack of pollination.

This season a number of orchardists sprayed their orchards while in full bloom and as a consequence bees died by the thousands. My yard was hard hit, but not quite so bad as one of my neighbors.' There is no way to adequately visualize the wreck of an apiary following such a disaster. The unsealed larvæ, nurse bees and queen are potential victims, while outside the hives are clumps and windrows of the dead and dying, with here and there individual bees hopping up, as if to take wing at your approach, only to settle back to the ground, and I am reminded of one of the lines of Burns': "Why startle at me, thy poor- earth-born companion and fellow mortal?"

As I view the graveyard of my hopes and see my mute friends done to death by a slow, corrosive poison, I am led to believe that "Man's inhumanity to man" is only equaled by man's inhumanity to these dumb creatures over which he was given dominion.

An orchardist to whom I suggested that if he permitted the vetch to continue blooming in his orchard he would kill off many bees, replied: "I'll tell the world that there will be bloom in that orchard on and after the 15th of June." He was brutally frank, entirely revealed himself, and I considered that nothing was to be gained by further talk on that subject. He represents the view of at least a part of the orchardists. But there is another type. They belong to the tribe of Joab. They salute you with: "Is it well with thee, my brother?" But look out for the steel blade concealed in their cloaks.

I am prepared to believe that there is yet a third class, who rejoices when we rejoice, who grieves at our misfortunes, and who is "willing to live and let live," but I have not found it.

Ahead of the apiarist in the Yakima Valley is the sign: "Keep off the grass; your bees have no business dallying with the daisies," and it is up to us either to move on or have our rights defined and recognized by law.

Washington.

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## SIGN PAINTING

### How to Do It

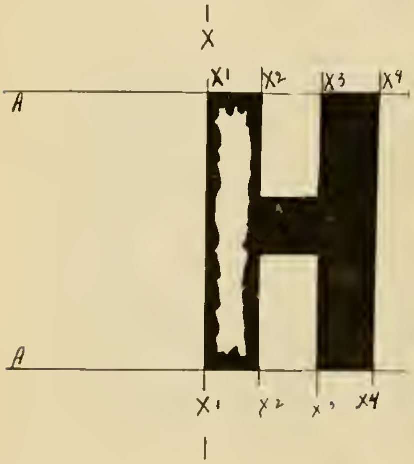
By A. F. Bonney

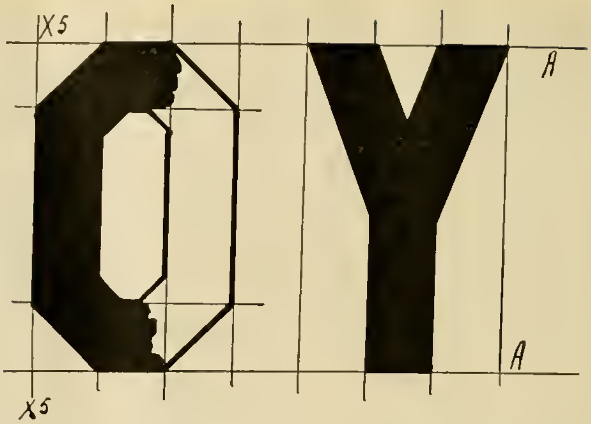
As a rule, we are told to put up a sign reading "Honey for Sale Here," but the word "Honey" will do in a pinch, if the reader fears to attempt the four words; and supposing this to be the case, I begin:

Get a piece of white pine board a foot wide and 42 inches long, planed, and give it two coats of light colored paint, white pink or cream, drying well between coats. Use a little excess of turpentine so that the paint will dry with a "flat" or dead surface.

When the sign is dry, take a straight-edge as long as the board and, using a lead pencil, draw lines two and a half inches from each edge, marked AAAA in the drawing. Let the lines be very faint. This will give you a space seven inches wide in which to put your letters, and letters of this size will be seen from afar.

Next provide yourself with a strip of thin board one and one-fourth inches wide and about ten inches long, beveled on two edges. This is your letter guide. To use it, measure eight inches from the left hand end of your sign to X1 on the board, place the letter guide to these marks and draw a line on both sides the letter guide, move the guide to the right and make X3 and X4, then make the bar of the letter H.





This is the plain Gothic letter, and is the basis of the many kinds in use. The space between letters is the width of the letter guide, while between words it is one and a half to two times the width of the guide.

In the attached drawing I have made the guide lines very faint and the outlines of the letters dark, for the guide lines will soon disappear.

The mixing of paint is a mystery to many people, but is really very simple. For our purpose secure a paper of lamp black, a dime's worth of Japan drier and a pint of raw linseed oil, and putting a heaping tablespoonful of the black in a dish add oil, stirring constantly, until you have a mass as thick as cream, when you add a teaspoonful of the drier. Stir well and the paint is ready to use.

Using a No. 8 sable "pencil," which is a brush, paint very carefully up to the outlines of the letters until you have a strip a quarter of an inch or more wide the shape of the letter, then, with a half-inch brush, fill in the rest of the letters; let dry, and your sign is ready to use. It will be as well for the beginner to let the outlines to dry before filling in, but a hand rest may be made—a sort of a bridge—by using a piece of thin board three inches wide and a foot or more long. On one side of this, across both ends, fasten thin strips of wood, and it is ready to use.

Leave the sign stand until it is dry, then put it up, and as simple as it is, it will attract a deal of attention. If a larger sign is desired, all there is to do is to widen the letter guide and the sign board in proportion. If, for instance, you want to make a sign with letters a foot high, use a board about five feet long and eighteen inches wide, made of white pine flooring, cleated together with strips on the back, and make a letter guide two inches wide, which will make a sign that may be read a long distance.

A person may, of course, use bright colored paints in making signs, but to my notion there is nothing better than a neat black and white sign.

Iowa.

## MOVING BEES SHORT DISTANCES

On page 366, September Journal, "New Hampshire" asks for a method of moving bees without loss. Langstroth Revised, page 308, latter part of paragraph 572, gives the best method I ever heard of: Moving the strongest colonies first, letting the bees that return strengthen the weaker colonies, moving the weakest last, thus equalizing their strength and moving them without loss.

I think this plan so good that it ought to be published three or four times a year until beekeepers are as familiar with it as they are with the Demaree system, clipping queens or any other manipulation.

In moving a single colony a short distance, a good plan is to place on the old stand a hive with a comb in it, one with a little brood in it, if possible; leave it for two or three days, as all the old bees do not return the first day; then, at night, place the hive on top of the colony where they belong and let them unite through a newspaper or bee escape. They will stay "put." E. M. Cole.

Iowa.

(The only objection to that method is the number of trips necessary to move all the colonies. But, it will work well in an instance such as is mentioned on page 366. This scheme was suggested by Mr. Langstroth, who wrote, in his first edition of the "Hive and Honey Bee:

"Selecting a pleasant day, I moved, early in the morning, a portion of my very best stocks. A considerable number of bees from these colonies returned in the course of the day to the familiar spot. After flying about for some time, in search of their hives (if the weather had been chilly many of them would have perished) they at length entered those standing next to their old homes. More of the strongest were removed on the next pleasant day; and this process was repeated till at last only one hive was left in the old apiary. This was then removed, and only a few bees returned to the old spot. I thus lost no more bees in moving a number of hives than I should have lost in moving one; and I conducted the process so as to strengthen some of my feeble stocks, instead of very seriously diminishing their scanty numbers."

We thank Mr. Cole for recalling this to us. This should not prevent the apiarist from using a slanting board in front of each hive moved, as it calls their attention to the change of location.—Editor.)

### HE LIKES SESAMUM

A. W. Puett, of Jones County, Texas, writes an enthusiastic letter about the sesamum, after having planted the sample package of seed sent out by the American Bee Journal last spring. He planted the seed on April 28, the same day he planted his cotton. Part of the seed was planted on what he calls "raw hide" land, and the balance on good sandy land. It succeeded about equally well on both kinds of soil, except that he had a larger number of plants on the sandy land.

Under date of September 5 he writes as follows:

"I counted as high as 231 pods of seed on one plant. Sixty days after planting it began blooming and continued to bloom for 60 days, when it died, apparently from dry weather. It only had one good rain the whole season. Several times during the season I found the bees working on it. I don't know of anything that produces as much seed to the stalk as sesamum and I believe it will prove to be among the greatest bee plants ever introduced into this country. I secured a half gallon of seed from 40 stalks and am well pleased with it, considering the season.

When the stalk begins to turn yellow and a few seed pods are opening, cut the stalk below the lowest branch and place upside down in a large sack, barrel or tight box. In four or five days all the pods will open, and by shaking the stalk all the seed is threshed out clean, and with little work."

### THE HYBRID VS. ITALIAN

By Claron D. Barber

Mr. Prothero's ideal bee is certainly an admirable goal to strive for. However, I doubt very much if the ideal bee, or the nearest thing to it that will be evolved will be a hybrid. Attempts at improvement by crossbreeding along this line have not proved singularly successful in the past, no less a celebrated practical beekeeper and student of bee nature than the late Dr. C. C. Miller gave up hybrids after years of use, during which he constantly strove to improve his stock by selective breeding. A lack of fixity of character, even after a so-called strain has been established, is their glaring and omnipresent fault. Also I question the possibility of any hybrid strain possessing the uniform foulbrood resistant qualities of a good strain of Italians, a quality which, going hand in hand as it does with colony strength and honey production, is something sought after above all other qualities.

In live stock or similar lines we find no attempts at improvement by hybridizing; why should something that has been given up along these lines work out in bee culture? I would suggest that the qualities Mr. Prothero would give to the Italian by the addition of foreign blood should rather be bred for selection in a pure strain of Italians. It is my opinion that this, when the difficulty of obtaining the desirable characteristics of a race in its crosses and other obstacles are taken into consideration, should prove the easier of the two. Then, when we did obtain the strain, we would have it for all time, something we would not be sure of with blacks. Perhaps it were best to stick to the old reliable three-banders, who have proved themselves the best for general use by many years of trial

Illinois.

## BEEKEEPERS BY THE WAY

### Well-Known New Yorker

In the State of New York there are a number of well-known beemen, but none more fascinated with the pursuit of honey production than George B. Howe, of Sacket's Harbor. Howe is one of the well-known queen breeders of the eastern section, and there are few who are able to secure queens of such uniformly high quality as he. He selects for a breeder the queen at the head of a colony which has not swarmed and which produces the largest amount of honey. In this way he is building up a strain of heavy producing bees. At the same time the other qualities, such as gentleness and color are not overlooked. Howe believes that by giving the same careful attention to breeding bees which has been devoted to poultry, cattle, hogs and sheep, that equal results can be obtained.

George B. Howe

### BOTTOM STARTERS

By C. E. Fowler

In the July issue, page 280, Mr. Greiner speaks about drone comb. He says:

"Yet we have to cull out many otherwise nice combs on account of the foundation having sagged to an extent to make them for all practical purposes drone comb."

When I used starters (for economy) I made a big mistake, but that was years ago; since I use full sheets I have had better luck, and I never have any drone comb from stretched foundation.

Either his wiring was wrong or his foundation was too light.

He says: "We cannot keep our extracting supers as free from drone comb as our brood chambers." I always use full sheets of foundation and bottom starters in the supers, and never have any drone comb whatever; unless the mice make a hole first, which happens sometimes.

For years the comb-honey producers used starters. triangles, and short foundation, but they found the full sheet and bottom starter a great advantage and now many use them.

A few years ago I found out the bottom starters on frames were far superior in many ways to single sheets.

My bees always fasten the comb to the bottom bar before they put much honey in; that is, they connect the sheet to the bottom starter and fill the frame entirely full of worker comb, frequently not leaving room for a single drone cell.

The bottom starter gives about 5 per cent more room for honey, so that 19 supers will hold as much honey or brood as 20 supers without bottom starters, and pays for the trouble about once every year, 100 per cent.

New Jersey.

### BLACKHAWK COUNTY, IOWA

The Blackhawk County, Iowa, Beekeepers' Association was organized the evening of July 29, 1921. The following officers were elected to serve until the regular annual meeting in October: President, M. M. Moore, Waterloo; Vice President, M. W. Oman, Waterloo; Secretary, Amos Burhans, Waterloo. The Executive Committee, which includes the three officers mentioned, is also strengthened by the addition of two other members, namely, H. S. Hayes, Cedar Falls, and Roland Nutt, Waterloo. They plan to hold a field meeting, with the assistance of Mr. Newman Lyle, of the Extension Department of the Ames Agricultural College, as demonstrator, in September.

The objects of the association are to promote good beekeeping, to assist in the eradication of bee diseases in its territory, to foster the interests of its commercial honey producers, to enlarge its honey market, to hold an annual field meet within its district, and to co-operate with the State and National Beekeepers' Associations.

## SOME BEE PHOTOGRAPHS

By F. Dundas Todd

Wm. Wilson's apiary in Kent, England

The first picture is a view of part of my own apiary as it looked in the beginning of July, 1920, when it was all set for the honey crop that never came. It shows the transformation complete from a system when only shallow bodies were used to the modified Dadant. With poor seasons it has been quite a task to get the new combs built, but the work is over and I am glad I made the change. All through a dozen years I have had but one thought, the avoidance of heavy lifting; hence the adoption of the shallow body. But I found I had very many medium lifts, so I tried a few modified Dadants, always wondering what Mr. Dadant meant when he said in answer to one of my remarks about the heavy lifts, "Why lift a Dadant hive?" Now that I have had as high as forty-two going at one time, my only regret is that I did not start with these hives, as they are the easiest worked of any I have tried, and one lifts a brood chamber but seldom.

Seeing we have much rain in winter and spring, and that our nights are invariably cool in summer, I have retained the principle of the cap, but have detached it from the roof, in other words, I have risers to enclose the supers, as is the fashion with British beemen.

Each riser is the depth of an ordinary hive. In winter one is occupied by a sack of dry leaves, and that is about all the preparations I make for winter, but since that pillow of moss is used all the year round, the minute the supers are removed the sack is just naturally placed in position, and packing is all done, provided there are enough stores in the brood chamber. So that part is easy, much easier than with my old plan of cases filled with packing. I have room for eleven Jumbo frames with inch-and-a-half spacing in the brood chamber. When I cut down the number I fill in with enough three-quarter inch followers, usually four, hence the side walls are more than two inches thick, the back is an inch and a half, and the front is three-quarters of an inch.

Each super contains 9 or 10 ordinary shallow frames in a space that will hold 12 if crowded, a capacity of at least 45 pounds of honey. Two risers still protect three supers, but I use only two, then the pillow of moss above. In spring the only unpacking is to remove the sack of moss, which takes but a moment, and the frames are available for examination. Until the first of July I have but the one story, the brood chamber; after that I handle supers, and there my heaviest lift is about 50 pounds. It is by far the simplest beekeeping system I ever tried, so I am content.

The tallest hive in the row deserves special notice, as it is my first attempt at running a twin hive, that is, one with two queens side by side, with only a wire netting between. I have had this kind of thing on my mind for over a dozen years, but could not get interested in the idea of trying to run a hive at least 28 inches wide, that is to say, twice the width of an eight-frame hive, then a second story of like dimensions to complete the brood chamber in May, followed by supers of the same size. Even limiting each queen to 12 combs meant a front of not less than 21 inches, all odd-sized dimensions. Last winter it struck me the Dadant hive was just ideal for the venture, as 10 Jumbo frames would be about right, these in two stories. So I made the center partitions of double mosquito netting, separated by a framework of three-eighths inch wood. The second story is made of two supers nailed together, and also has a partition like the one below. Above is a queen excluder, then the super, which has no partition, so the bees have the space in common.

So far I have had no success with the three double colonies I started; they were no better and no worse than the other colonies in the yard. The queens were all young and from a good breeder, but the start was made after our spring flow was over, and no colony could possibly build up in the dearth that followed. One beeman in the city of Victoria tried one a year ago, getting from it a crop that easily excelled the total of 8 other colonies in the yard, and that is almost all I can say about the system thus far.

I am going to modify it a little bit in 1922 by separating the second story of the brood chamber into parts, perpendicularly, so that I can work one side entirely without disturbing the other; besides, I will have less weight to lift. These half bodies have ends of ordinary thickness, but the walls are only of half-inch board, this being necessary to get them inside the risers. Incidentally, these half bodies will do nicely for queen mating as well.

In all of these double hives I noticed one feature worth mentioning—the tendency of the bees to gather to one side, the west one, in all cases, when the partition was put in. When supers were put on I expected the bees would cross over to the other side quite frequently and so equalize the colonies, but I could never see that they ever did so. Maybe if the population had become very strong

Todd's apiary in Modified Dadant hives

such movement might have happened, but the numbers never got to boiling strength. I am trying to winter them as they are, and hoping for better results next season.

A Scotch beekeeper near London kindly sends me a photograph of his apiary, and this I send to the editor, as I think many would like to see how Britons run their yards. The risers I have spoken of are in evidence on these hives, but my venture in this direction was no imitation of the British system of beekeeping, it was merely the logical outcome of the experiments in wintering I have been making for years. Similar climatic conditions produced like results. It was only after I had reached my final conclusions that I realized I had adopted the British principle.

Mr. Wilson for several years has discarded the beekeeping system of his native land and followed that of British Columbia with much advantage, he says. The idea of the British beekeeper is to take all the honey in the fall, and winter on sugar. In spring sugar is fed steadily. These beekeepers think they are doing well if they have 10 of their frames, with an available brood space of 1,800 square inches covered with bees at the beginning of the honey flow. In British Columbia we want at least 10 solid frames of brood, over 3,000 square inches, which means we have at least 20 frames packed with bees. I have often seen 14 frames of solid brood, and 30 frames solid with bees as early as the end of May. To my mind it is largely a question of winter stores. Whenever we get a man to the point where he will leave a solid second story of honey for the winter, We feel a new beekeeper is born; but how few will surrender immediate gain for future profit? Mr. Wilson, adopting our system, says he gets powerful colonies, and when seasons are good he secures big crops; but alas for human skill, in his present location, with thousands of acres of white clover and sainfoin around him, he has not got a crop of any kind from 100 colonies for four years. Withering drought or steady rain has been his lot when honey flow time came.

British Columbia.

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## BEES ON WILD CARROT

The wild carrot, commonly called Queen Anne's Lace, or bird's nest plant, is a common weed in fields and waste places throughout the eastern states. In places in New York and New England it is so common in fields that one sometimes mistakes it for a buckwheat field at first glance.

Chas. F. Hoser writes that he has been a beekeeper in the vicinity of Philadelphia, Pa., for 24 years and never until this year has wild carrot been of any value to the bees in his vicinity. During 1921 the bees have worked it freely and apparently have secured considerable nectar.

Eastern beekeepers only report bees working on it occasionally, so it is evident that it is seldom of much importance in the east. In the west where the cultivated carrot is grown for seed, it is said to be a valuable source of nectar.

# THE EDITOR'S ANSWERS

**When stamp is enclosed, the editor will answer questions by mail. Since we have far more questions than we can print in the space available, several months sometimes elapse before answers appear.**

### Queen Cells

I received a two-frame nucleus on the 5th of August, with an untested queen introduced. In about ten days the bees started queen cells and have completed six up to date; the first three have been removed. The bees are in an eight-frame hive and are working good, and the queen seems to be a good layer; she lays an egg in every cell that is empty, once in a while two in a cell. Should these queen cells all be removed, and why are they building them. NEBRASKA.

Answer.—It happens quite often, when bees are shipped, that the queen becomes fatigued from the journey and is not in good trim to lay eggs for quite a while. When the bees notice this, they may start queen-cells with the intention of superseding her. But, often also, as in your case, the queen gets rested and begins to lay actively. Then the bees cease their superseding preparations. The fact that your queen sometimes lays two eggs in one cell shows either that she is still inexperienced, or that she is producing eggs faster than she can find empty cells in which to place them.

### Robbers—Goldens

1. I have a colony of Italians that have a few peculiar looking bees. They have a shiny, pure black, wasp-like appearance. When I say pure black I mean the head, thorax and abdomen are black, except that they show three yellow bands. They have no fine hair or fuzz on their thorax or abdomen. The other bees are continually pulling them out of the hive. The queen is a young Italian that I received from a queen breeder this spring. What is the trouble?

Why are golden Italians irritable?

2. On page 26 in Frank C. Pellett's book, "Practical Queen Rearing," he says: "While it is quite true that some strains of Goldens are not desirable, being neither hardy nor good honey gatherers, there are strains where proper attention has been given to other points, which are very satisfactory. CALIFORNIA.

Answers.—1. The black, shiny bees, which have lost all their hairs are usually robber bees, who are shiny because of lurking about corners and trying to steal honey anywhere except in the blossoms. We can hardly blame them, for, often, those bees are rendered dishonest by the opportunities which have been offered them in exposing honey where they could get at it. If they are mishandled or illtreated, it may be that they are in a hive to which they do not belong, or that by pilfering they have acquired a foreign odor; or perhaps they are so worn as to be considered as of no value in the hive.

2. The irritable golden bees, high tempered and restless, are usually secured from a cross with Cyprian drones. The ugly disposition of the Cyprian seems to remain in the race a long time, with the bright color. The gentle goldens are from continuous selection of bright colored Italian bees and queens. We do not know who is a breeder of these strains, but if you wish to get gentle goldens, ask the question of the breeder from whom you propose to order. Tell him you want peaceable bees.

### Wintering—Moths, Etc.

1. Last fall I had a late swarm of bees which did not make enough honey to winter. I gave them sugar and water in a super. They took down about a quart of this and had sugar candy in the super. When the honey was all gone, February 15, they all died. Please advise how to keep a light swarm, for I have two or three for this winter.

2. What is a good thing to kill bee moths and keep them away from bees?

3. I have in an old hive of bees about 125 pounds of honey; the bees did not swarm. Was it because they had so much room?

4. Please advise a good way to get a swarm of bees out of a stone house without tearing it down. The bees have been there at least two years.

5. I had an old hive of bees which, when heavy enough, built about five or six queen cells. About a week after I cut them all out but two. Then I took the old queen and one drone and half the bees and put them in a new hive in the place of the old hive, an moved the old hive quite a distance away. A lot of the bees went to the new hive. The old hive did not make enough to winter; I rather doubt if they will live through the winter. Did I swarm them wrong? NEW YORK.

Answers.—1. To keep sugar syrup from crystallizing, add about 10 per cent of honey to the syrup. Don't give them less than 25 pounds.

2. A good thing to keep moths away from the hives is to have none but strong colonies. Moths cannot damage healthy, strong colonies. Italians are better than blacks in this respect.

3. Of course it was.

4. The only way is to take out the wood wainscoat on the inside, to get to the bees. Otherwise you can only kill them by pouring bi-sulphide of carbon into their opening and closing the holes; bi-sulphide is inflammable, so do not bring a light near.

5. This might have been all right if the season had been very good, but you took too much away from the old hive. As to the *one* drone, there was no need of him. You need to read a good text book on bees.

### Partnership

A and B go into the bee business. A furnishes 50 per cent of the purchase price of bees and equipment, a honey house and an apiary site; B half the capital and does all the work. What would be a proper division of the profits? Also if B furnished only one-seventh of the capital. CALIFORNIA.

Answer.—It has always been our understanding that the labor put upon an apiary equals the interest of the money and wear and tear of the capital. So, we figure about half and half, if one man furnishes all the investment and the other all the work. From that we would conclude that the man who did the work and furnished half the capital should receive about three-fourths of the income. We also figure that the man who furnishes the apiary site and the bee house and watches the possible happenings is entitled to one-tenth of the crop. But these matters must depend somewhat on conditions, location, expenses, labor required, etc. So it would be difficult to pass on this without knowing all the circumstances. There is also a difference in opinions on the matter, according to the greater or less experience of the man who does the work and the greater or less cost of the bees and equipment. Much of it must be adjusted by the parties themselves, without regard to other people's ideas.

### Requeening

1. I have been having some trouble in getting a hybrid colony of bees to accept an Italian queen. I tried removing the old queen and introducing the Italian simultaneously.

Would it be more sure to remove the old queen, say 6 or 8 days prior to the introduction of the new one, and remove all queen-cells?

2. Would the bees be hopelessly lost after 8 days without fresh brood or queen?

3. Do you think peppermint is practical in the introduction of queens or uniting hostile colonies, as discussed on page 359 of the September Bee Journal. MISSOURI

Answers.—1. No; the removal of the old queen immediately previous to introducing the new one is generally considered as the safest. You might try to place the old queen in a cage for an hour or so before introducing the other in her place in that same cage. That gives the cage the odor of the old queen and helps some. Then put the introducing cage in a central place between two combs of brood, and do not release the new queen until she has been in the hive 48 hours. After releasing her, be sure to leave them alone for a few days, until they get fully acquainted with her.

2. Being 8 days or more without either brood or queen might induce some drone-laying workers to lay eggs. Then the introduction of the queen would be just that much more doubtful.

3. Peppermint or other strong smelling drugs would help in introduction. The only danger is in the use of such drugs in sweetened water. This attracts the robbers, and there is always more danger of a queen being killed when robbers are about. For that reason, we have never used such methods to any extent.

### Care of Queens

A neighbor brought me some queens which had been given to him. I thought it risky to introduce them at this time of year and never heard of it being done, so I put the queens confined in the cages above the cluster in the hives. Will the bees take care of them there, and for how long? Will they live till spring confined in this way, and will they be any good after being shut up so long, or will it do to introduce them now, if we get a warm day? At what temperature can it be done? I do not like to take too much risk at this and have a queenless colony. TENNESSEE.

Answer.—You certainly have me cornered, for I must reply, as Dr. Miller so often did: I don't know. I have kept queens quite a while over the brood nest in the warmest part of the hive. But I have never tried to winter them there. I believe, however, that the bees will take care of them as long as they have their cluster close enough to keep them warm.

A warm day when the bees fly might be all right to kill an old queen and introduce a new one. But here, also, I have to acknowledge that "I don't know." A day when the temperature is about 65 degrees ought to be warm enough to open the hives.

If you try all this, you will have some experience worth while, and I would be glad to hear how you succeeded.

### Late Feeding—Frame Spacing

1. Would it be safe to feed a colony of bees, short in stores, sugar syrup this late in the season, and would you feed it at the entrance? Do you suppose this would start the queen to laying, and, if so, would the young brood perish during the winter? The hive is an old gum made out of 2-inch material.

2. If you were buying new hives, would you get the 1⅜ inch spacing or the 1½ inch? Which, in your opinion, is the better? MISSOURI.

Answers.—1. It is rather late to feed liquid food to a colony in November. Better give them sugar candy. To make candy, add water to sugar and boil slowly till most of the water is evaporated. Stir constantly, so it will not burn. To know when it is done, drop a little into cold water; it should become brittle at once. Pour it into pans to make cakes about an inch thick. With a box hive, it will probably be necessary to cut a hole in the top, large enough to reach the cluster with your candy. Don't give it to them at the entrance, as it will be found by robbers as quickly as it will be found by the bees of the hive. In the cellar, one can turn the box hive bottom up and put the candy right on the combs. The queens will not be likely to be induced to lay, by the use of candy.

2. I much prefer the 1½ inch spacing.

### Temper

I have a stand of bees with a young queen in my yard that for some reason are extremely hard to handle, fighting and stinging upon the slightest provocation, and frequently attacking me while working with other stands near by. This hive was started in the spring with a ripe queen-cell taken from a colony of pure bred Italians, and until lately gave no trouble. As far as I can tell, the young queen, in mating, met an Italian drone, as the bees do not show any indication of being mixed, but show all the marks of the pure Italian. They are in a ten-frame cedar hive and cover nine frames with stores and brood nest.

Can you tell me of any reason why they should get the disposition of a hornet?

The other bees in my yard are pure Italian and have always been gentle and easy to handle. OREGON.

Answer.—No, I cannot see any reason for the behavior of those bees, if they are pure Italian and bred from quiet Italians. Some of the Golden Italians are of that color and temper, because they have been bred with a mixture of Cyprian blood, from some remote mating at the time when Cyprians were in vogue. But if your other bees—and especially the ones from which this queen was bred—are of gentle disposition, I can only surmise that the ill-disposition is a return to some ancestral type or what is called "atavism."

But wait, there may be another reason. The hive in question may have been disturbed by mischievous boys. I have seen colonies become very irritable when ill-treated.

In either case, I see but one remedy. Change the queen at the first opportunity, unless their behavior changes,

### Transferring—Bee Pasture

1. I have 15 colonies of bees in eight and ten-frame hives, but the combs are built crosswise, so it is impossible to move them. I wish to transfer them to ten-frame hives with full sheets of foundation. When is the best time?

2. What number of colonies can be kept in a locality where there are about 100 tulip trees, 20 acres of alsike clover and about 40 acres of buckwheat within one-half mile of the bees. PENNSYLVANIA.

Answers.—1. The best time to transfer bees is at the time of fruit bloom in spring. We do not advise transferring late in the fall.

2. If there are 100 tulip trees, 20 acres of alsike clover and 40 acres of buckwheat inside of a half mile, there would probably be ten times that amount inside of two miles. In that case you could keep 80 to 100 colonies there. Bees can go much farther than a half mile after honey. Of course, the amount of honey to expect from a radius of two miles is all guess work and never the same, for much depends upon the weather.

### Syrup for Feed

Would you kindly let me know how to prepare a syrup for wintering bees? WISCONSIN.

Answer.—Melt 10 pounds of good sugar with 5 pounds of water, and when dissolved add 1½ pounds of honey of such quality as you are sure of. Unknown honey might bring germs of foulbrood. Put into friction-top cans, the lids of which are pierced with a number of very small holes, and invert on the hives to be fed.

You may also feed your bees by laying over the tops of the frames cakes of candy made in the way that "fudge" is made for the children This is for emergency. Syrup is better.

Do not feed either corn syrup or molasses. They would kill your bees, in winter.

### Queenless Colony

1. I have one swarm of bees that was queenless for 30 days or more and had no fresh eggs during that time. I went to give them a queen and there was a nice young queen that had just begun to lay. Could a mating queen have made a mistake and got into the hive? I missed one in a hive about 8 feet from there.

2. How will I fix my bees? There are so many bees I don't think one hive will hold them all. Would a super do on top or underneath? NEBRASKA.

Answers.—1. Yes, it is possible that a young queen would make a mistake of that distance, especially if there was a row of hives, all alike in color and shape. There is another possibility, however, and that is that there may have been a little brood from the previous queen, which you did not notice, and that the bees reared a queen themselves.

2. We do not believe there will be any difficulty in your bees all getting into the brood-chamber where they were hatched. When the weather turns cold, you will find that they will shrink the volume of the cluster a great deal, because they will hang closer together. However, if there is not enough room for them, I would place an empty super or body under the brood chamber. Perhaps it might be well to give them another body with honey in it. In that case, better put it at the top.

### Unripe Honey

1. What is meant by "unripe honey?"

2. Is unsealed honey unripe honey?

3. Can unripe honey be preserved without change?

4. Is the crop greater when honey is unripe? What per cent?

5. Do they sell instruments to test honey and find whether it is ripe or not? What are they called, and where can we buy them?

6. Will honey ripen in tanks without heating?

7 By what process can we keep honey from granulating? CANADA.

Answers.—1. Unripe honey is nectar harvested by the bees which has not been sufficiently evaporated. Instead of flowing like thick molasses or maple syrup, it flows somewhat like water. Ripe honey weighs about 12 pounds to the gallon. Water weighs about 7 pounds. Unripe honey may weigh anywhere between these two weights.

2. Unsealed honey may be ripe, if it has been in the hive a number of days and the bees have worked to evaporate it by fanning the hive. The heat also helps to ripen it. Scaled honey may be more or less unripe, if the bees have sealed it too soon, during a heavy honey flow. It may then burst the cappings. Usually, however, sealed honey is ripe.

3. No, unripe honey will not keep. Its fermentation, more or less rapid, depends upon the temperature.

4. The nectar of blossoms, when harvested by the bees, sometimes contains as much as 75 per cent of water. Sometimes it is so thick that

it cannot be extracted. This is often the case with heather honey. Watery honey usually loses 25 or more per cent of its water during the first 24 hours, if the weather is warm and the colony powerful. The bees evaporate it by forcing a strong current of air through the hive. It often takes several days to ripen honey to proper consistency.

5. They sell instruments, which are called "hygrometers" to test the density of liquids, whether they are heavier than water, as is honey, or lighter than water, as is alcohol. These hygrometers may be bought from druggists in cities.

6. Honey is ripened considerably in tanks in hot, dry weather. But it is better not to extract it till it is fairly well ripened. This is a matter of locality What may be done in a warm country, like California or Texas, may not do at all in Canada. At any rate, it is always well to keep honey in a warm, dry room, so it may evaporate. Damp places are bad, because instead of evaporating, it gets more moisture and ferments.

7 Honey may be kept from granulating or may be melted when granulated, by heating it over water "au bain-marie." It should not be heated to over 165 degrees. It always loses some of the volatile essential oils which give the fine flavor and which are distilled by the flowers in the fields.

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### Bees and Grapes

A beekeeper and horticulturist in this community are having trouble. The beekeeper has 60 colonies of bees on another man's farm. One of the neighbors of this man has an orchard and vineyard. The bees went into this vineyard and sucked the juice ut of his grapes. He expected to obtain four tons of grapes, but claims that the bees destroyed two tons, having punctured the grapes, bursted them, etc. He claims damages.

1. Do bees puncture grapes? Give evidence from beekeepers and horticulturists if you can.
2. Do birds injure grapes by picking them? If so, what is the shape of the puncture that the bird makes in the grape?
3. Has this question of damages been settled in the higher courts of the country?
4. Does the bee do more injury to the horticulturist than good?
5. Can the horticulturist claim damages legally or morally from the beekeeper?
6. If the horticulturist notifies the beekeeper after the claimed depredation is almost complete, and the beekeeper agrees to furnish pickers the very next day, free of charge, and the horticulturist does not accept the proposition, what would be justice according to law towards both parties?
7. Do bees ever store away fruit juices in the hives? If so, does it injure the bees in winter, whether in the cellar or out-of-doors?

The conditions in this community, it might be well to say. so far as weather conditions are concerned, were as follows:

The summer was hot and dry until about three weeks before grapes were being picked; then came the rainy season; the grapes maturing much earlier than usual in this section, were over ripe, all of which the beekeeper claims caused them to burst on the vines. What can you say as to the bursting of grapes under such conditions? The frost in the spring destroyed most of the grapes in this vicinity, so that the crop is far from normal. This horticulturist's crop of grapes last year was about eleven tons, and his four tons for this season's crop is only an estimate on his part.

MICHIGAN.

Answers.—1. Bees do not, cannot, puncture sound grapes. Any one may try this by inserting a bunch of ripe grapes into a bee hive and removing it in 24 to 48 hours. Puncture one or two berries first, as a test.

2. Yes, birds pick at grapes. When very hungry they will almost destroy the berry, but when their maw is full they often pick at the bunches for pleasure. Then they usually make two holes in each berry, one above the other, with the two points of the beak.

3. No, no one, to our knowledge ever sued a beekeeper. If they did it they would be sure to lose.

4. The bee does more good than injury to horticulture, for there would be no fruit if the insects like the bees did not visit the flowers. This, also, may be tested easily, by enclosing apple buds under a gauze.

5. Not if the judge or jury takes evidence of sufficient extent.

6. Let that be decided by the courts, if it is worth trying.

7.Yes; bees store fermenting fruit juices in the hives when they are short of good honey, and those juices make them sick. We know that by our own experience.

If you wish additional statements concerning the question of bees and fruits, we refer you to the September number of the American Bee Journal, "Question and Answers," page 368; also to "The Hive & Honey Bee," paragraphs 871 to 878, inclusive. This matter has been often debated and the answers are just as plain as the fact that the earth moves around the sun and not the sun around the earth.

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## ODDS AND ENDS

### Colorado Short Courses

Colorado is to have two short courses in beekeeping conducted by the College of Agriculture in cooperation with the United States Department of Agriculture. The first of these is to be held at Fort Collins, during the week of November 21-27, and the other at Grand Junction, on the following week. Although the program is not quite completed, the instructors scheduled for these two schools are: Dr. E. F. Phillips, Apiculturist, U. S. Department of Agriculture; Geo. S. Demuth, editor of Gleanings in Bee Culture; Dr. C. P. Gillette, Colorado Agricultural College; E. W. Atkins, of the G. B. Lewis Company, Watertown, Wis.; C. H. Wolfe, Vice President of the Colorado Honey Producers' Association; Newton Boggs, State Apiary Inspector; Dr. W. R. Calkins, Cortez, and J. D. Caldwell, Rifle, Colo.

Newton Boggs,
Deputy Bee Inspector.

### Big Crops From Big Hives

I make this observation on the year's work. Every Dadant hive run for surplus gave me upwards of 140 pounds, except one which swarmed and one which was an unfilled nucleus when clover came on. Out of four Langstroth hives run for surplus, the best I got was 82 pounds, and down to 56. My Dadants were 228, 196 and 148 pounds. I lay this to the fact that with so much more honey in sight in the big hives, early breeding went right along, while with less reserve in the Langstroth hives probably held back early breeding.

Elmer T. Beach.

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### A Good Report From Indiana

I got 2,440 sections of nice clover honey and the bees are all in good shape for winter from buckwheat and goldenrod honey. All have 50 pounds of surplus in the brood chamber. This was taken from 16 colonies, spring count, and an increase of 100 per cent.

Two of my best colonies made each 176 sections, the next best were 8 colonies with 168 sections each. I am certain that they would have produced more if I had only put on more sections. The fall flow was never so good.

Frank Langohr.

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### Honey Bees and Honey Plants

The average United States yield of surplus honey per colony to September 1, this year, is estimated at 40.5 pounds, which is about the average yield to that date, but only 78 per cent of the yield at the same date last year. The number of colonies is greater than last year, however, being estimated at 107.4 per cent, so that the indicated total production of honey to September 1, this year, is about 84 per cent as great as last year's yield.

H. C. Taylor,
Chief of Bureau of Crop Estimates.

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### Honey Imports for 12 Months

The total honey imports from foreign countries to the United States for the year ending June 30 were 452,983 gallons, or over five million pounds. No wonder we have been affected by the influx of honey. This does not include, either, the large amount of honey coming in from Porto Rico and Hawaii.

Countries sending us the most are as follows:

| | |
|---|---|
| Dominican Republic | 107,901 gallons |
| Cuba | 99,845 gallons |
| England | 69,217 gallons |
| Mexico | 35,295 gallons |
| Chile | 34,678 gallons |

These figures are taken from the Report No. 80 of the Bureau of Markets.

England and many other countries listed as exporters of honey, do not likely produce any of this honey themselves, but act as merchants as between the point of production and the United States.

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### Texas Gets Wet

Texas has the reputation of doing things right, but in the matter of water they have recently overdone it somewhat. Our readers will be glad to note that the Texas Honey Producers' Association emerged from the recent flood at San Antonio with but a small loss to their goods. There was four feet of water in the warehouse where their honey and bee supplies were stored and it required a large amount of labor to get all the "water out of their stock." Since tons of honey were under water every can had to be examined to make sure it had not leaked, and the wooden goods required moving to a place where it could be promptly dried out.

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### Government Honey Report

The Monthly Crop Reporter for September 1 shows the average honey crop of the United States as 40.5 pounds per colony as against 51.9 last year, and a five-year average of 40.4 pounds. Condition of honey plants is only 77 per cent as against 85.8 per cent for last year, and condition of colonies is given as 87 per cent, as against 90 per cent in 1920.

### C. A. Hatch Dies

Word has recently reached this office of the death of C. A. Hatch, of Richland Center, Wis., a well-known beekeeper of that State. Mr. Hatch has been in failing health for some time past. He passed away on September 19.

### California Short Courses

Two short courses in beekeeping will be offered by the University of California this winter. The first at Berkeley, from December 5 to 10, is intended primarily for beginners. The advanced course will be given at the same place from December 12 to 17. An extension school will also be held at Los Angeles from December 5 to 10.

These courses are under direction of Prof. G. A. Coleman, and those interested should address him at the University, Berkeley, Calif., for complete program.

### Co-operation Needed

We need an extensive educational campaign in the interest of American beekeepers and the extracted honey producer especially. In our exhibiting we met with distressing circumstances. A contention exists between the beekeepers in a locality, through the poor policy of some of cutting the prices below what it is actually worth to undersell their neighbors. I was told of one man who sold his honey at 65 cents for a 5-lb. pail. How is that for a fair price for Michigan white clover? I live in hopes that some time soon we may have better control of the retail trade and the small producer.

Roland Adams.

Michigan.

### Why Not "Bee Jelly?"

The three-year-old son of a friend was having his first taste of honey, and his mother explained how honey was produced, and showed him a bee gathering honey on a blossom.

The next day the boy wanted more honey, but forgot the name for it. What more natural than that he should ask for "bee jelly?" Just yesterday he was heard trying to explain why a bumblebee was not a "jelly-bee."

Perhaps those people who are anxious to rid our vocabulary of the term "extracted honey" as a misnomer, would be willing to compromise on "bee jelly."

### Apple Trade

Recent reports would indicate that the apple trade has slackened up owing to advances in prices made by handlers. "The Packer," of Kansas City, says:

The keen edge seemed to have disappeared from the active apple market of last week, due in a large measure to the high prices prevailing. Some receivers were asking as high as $12 a barrel for high-colored, good-sized fruit on Monday of this week, fruit that sold the preceding week for $9. Demand was moderate Monday and average Wealthies and Snows sold from $5 to $7. Gravensteins brought $8 and $9 and McIntosh Reds from $9 to $10 on the best and $7 and $8.50 on unclassified. Crab apples have been in very light receipt and have sold from $8 to $10. Washington boxes of McIntosh Reds, orchard run, medium and large sizes, have sold at $4 to $4.50, small sizes at $3.50 and No. 1 McIntosh Reds from Maine at $3.50 to $4.

### Trying for Lower Freight Rates

The International Apple Shippers' Association, the National League of Commission Merchants and the Western Fruit Jobbers' Association of America, co-operating, are gathering facts on the effects of high freight and express rates on the fruit and vegetable industry.

This information, when tabulated, is to be presented to the Joint Commission of Agricultural Inquiry of Congress and to the Interstate Commerce Commission in an effort to have rates reduced to a workable basis.

It is promised that this is the most exhaustive survey of food distribution costs ever undertaken.

## THE GERMAN HONEY MARKET

The honey market is returning to what it was before the war. Imported honey is in direct competition with the native, and when, by this competition, honey prices are cut, then the German beekeeper must retain his product. In other words, this misfortune has come upon us.

How was it before the war? In Hamburg foreign honey could be bought for 5 cents per pound, while native honey brought 25 cents, or five times as much. The honey-consuming public knew the difference between German and imported honey and bought the former from the beekeeper at 25 cents a pound, since he could only get the darker imported honey from the storekeeper in glass at 15 to 20 cents a pound, and it did not suit him.

How is it today? The public got used to substitutes during the war, glucose, adulterants, etc. Now again, in place of the substitutes comes the foreign honey, especially from America, where the crops yield immense profits compared to ours. But how does it taste compared to our native product? One need have no sweet tooth to find that the imported honey lacks the property which makes honey real honey, the fine, pleasant aroma. There is lacking, as is said of wine, the "smack."

Foreign honeys are many times low grade, which can in very few ways be mixed and blended to advantage. Also adulterants are not lacking. Anyone with a knowledge of honey, therefore, will not buy the foreign product. If the native honey costs 2 cents a pound more, it is worth it. Before the war, native honey sold for five times as much as imported. Now it brings only one-third more and, unfortunately, our beekeepers cannot sell our honey as cheaply since a beekeeper's needs (sugar, beeswax, hives and supplies) are raised out of all proportion.

Whoever desires honey, therefore, should buy no worthless, flat honey from abroad, but the uncontaminated, age-tested home product.—Der Bienenpflege for August.

## BEARS ATTACK APIARIES

### G. M. Newton Gets 300-Pound Bruin With His Rifle—A Loss of 20 Colonies at Beausejour.

It is a well-known fact that bears will often attack wild bees in the woods, being very fond of honey, but it is not often that a beekeeper has to reckon with bears as a problem in practical bee culture under civilized conditions. Yet some of the yards in Manitoba have been attacked by bears this year.

On September 4, Mr. G. M. Newton, the President of the Manitoba Beekeepers' Association, went to one of his outyards at the mouth of the Red River, near Selkirk, and brought home a 300-pound bear which he shot with a rifle. Residents of the neighborhood have seen a number of bears hanging around the yard, but there was no actual attack on the bees. Reports place the number of bears at eight.

At Beausejour a Polish beekeeper is said to have lost 20 hives through their being carried off by bears and broken open in the woods.—Western Gardener and Poultryman, September, 1921.

Winnipeg.

### A Safe Introducing Cage

Take a piece of wire screen six inches square, cut the corners so you can turn all four sides down half an inch. Shake the bees from a comb of emerging brood and release queen and attendant bees on this comb. Place your wire cage over the queen and push the edges well into the comb. The frame, with cage attached, can now be replaced in the queenless colony and left for three days. After three days open the hive and with a lead pencil punch a hole through the comb near the center of the cage. This will provide a way of escape for the queen. After punching the hole the frame should again be replaced in the hive and the hive closed for five days more, when the cage can be removed.

This plan has worked for me for ten years. Try it with one queen or a thousand.

George R. Shafer.

Arizona.

### A NEW ADVERTISING STUNT

When it comes to starting something, leave it to the Vigo County, Indiana Beekeepers Association. It looks like President W. A. Hunter must lay awake nights thinking what to do next.

The latest from Terre Haute is "honey week." To start the thing off right the Mayor issued a proclamation setting aside the days from September 12 to 18 as honey week and urged everybody to buy Vigo County honey. C. O. Yost, one of the apiary inspectors, came to town to give live bee demonstrations for the entertainment of the public and to assist the members in demonstrating better methods to the beekeepers. In the forenoon of each day a trip was made by all interested in practical beekeeping problems to some apiary within driving distance of the city. During these forenoon sessions the local beekeepers discussed every problem of production and disease control.

In the afternoons a big wire cage was put up on a prominent corner in the heart of the business district. In the cage Yost gave a live bee demonstration that startled the folks who knew nothing of bees and attracted a big crowd to learn something about honey. State Entomologist Wallace came down for two days to assist with the enterprise and to give variety to the entertainment.

With the crowd gathered by the unusual entertainment, the next step was a honey market open for two hours every afternoon. People were told all about honey and many carried home a liberal supply. Large quantities were sold and many beekeepeers established contact with new customers who will continue to buy for a long time to come.

The Vigo County fellows began a few years ago to educate the box-hive beekeepers in the community in an effort to clean up disease. They made good beekeepers of a few and educated a lot more clear out of the business. Now they are starting in to educate the public to use honey. Judging from the large amount of publicity in the Terre Haute papers, they are doing a good job at both.

### Ontario Convention

The Ontario Beekeepers' Association are holding their annual Convention on Tuesday, Wednesday and Thursday, November 22, 23 and 24, in Toronto. The Convention will be held at the same time as the Royal Winter Fair. An excellent program is in the course of construction, and the Hon. Manning Doherty will address the beekeepers on "Marketing." Other prominent speakers are expected to be present. Full particulars may be obtained from the Secretary, F. Eric Millen, Apiculture Department, O. A. C., Guelph, Ont.

### Winter Conventions

Prof. H. F. Wilson, who as Chairman of the Schedule Committee for the National Honey Producers' League, is endeavoring to arrange the conventions in the form of a series of circuits, announces the dates of group five as follows: Michigan, December 1 and 2, at Lansing; Chicago-Northwestern at Hotel LaSalle, Chicago, Dec. 5-6; Wisconsin at Madison, Dec. 8-9; Minnesota, probably at St. Paul, Dec. 13-14, and Iowa at either Waterloo or Davenport, Dec. 15-16.

### Western New Yorkers to Meet

The Western New York Honey Producers' Association will hold its annual fall meeting at the Genesee Hotel, Buffalo, N. Y., on Tuesday, November 15. A good program has been arranged and all beekeepers are invited to attend.

J. Roy Lincoln, Secretary.

### Illinois Convention

Announcement has just been received that the Illinois convention will be held at Springfield on December 7 and 8, which will place them in group 5 of the National schedule. The Illinois meeting will come between the Chicago-Northwestern and the Wisconsin meetings.

### Another Remedy for Beestings

I have a remedy that has saved myself and my children a lot of pain. As soon as I get stung, I dip a toothpick in carbolic acid and just touch the place stung. It does not smart if you don't put too much of it on. Of course it is dangerous to have the acid where children could get at it. It should be kept in a place out of their reach. P. P. Bandura, Creston, Ia.

### Ontario Dark Crop Report

The dark honey crop report for Ontario appeared on October 1. The total dark honey reported was 395,445 pounds from 16,817 colonies, or an average per colony of 24 pounds.

The recommendations of the committee are as follows:

Dark amber or buckwheat extracted, wholesale, 9 to 11 cents; retail 12½ to 15 cents.

### Bees Rooting

Page 411, October number, "Why bees root."

They are not rooting, they are varnishing. They do this on the underside of cover and all over the inside of the hive. If you will examine the inside of a hive, you will see that it never looks old, as it is varnished. This is their style of housekeeping inside, and they do the same on the outside when they have nothing else to do. Georgia.

### Montana Producers Organize

A tentative selling organization of beekeepers was formed at Billings, Mont., recently, called the Montana Honey Producers' Association. Officers elected were, B. J. Kleinhesselink, President; B. F. Smith, Jr., Vice President; R. A. Bray, Secretary-Treasurer; L. W. Thorpe, Manager; W. A. Petzoldt, Director.

The amount of honey held by the members amounts to 529,000 pounds. If present plans show indications of success the organization will be made permanent.

### A New Bee Magazine

The "Revista de Apicultura" is starting in Buenos Aires, with the September number. It is a 32-page magazine which is beginning with the progressive ideas. They mention Dr, Miller, Gleanings, the American Bee Journal, and publish articles from Morley Pettit, Jay Smith, besides their own writers. Juan Hoffman is the editor. We wish the new publication success.

## CLASSIFIED DEPARTMENT

Advertisements in this department will be inserted for 5 cents per word, with no dis counts. No classified advertisements accepted for less that 35 cents. Count each initial or number as one word.

Copy for this department must reach us not later than the 20th of each month preceding date of issue. If intended for classified department it should be so stated when advertisement is sent.

### BEES AND QUEENS

ATWATER HONEY—Supply your customers.

FOR SALE—1,400 stands of bees and equipment; 10 locations extending from El Paso, Texas, 25 miles north in New Mexico. If interested ask for further information.
Me illa Valley Honey Co., Canutillo, Texas.

SEE our advertisements elsewhere.
Rosedale Apiaries,
J. B. Marshall, H. P. Le Blanc. Props.

FOR SALE—100 colonies of bees. Write for prices James Johnson, Pocahontas, Ark.

BEES by the pound for spring delivery in 1, 2 or 3-pound packages; also superior Italian and Carniolan queens from selected domestic and imported stock. Early order discount on orders booked now. Circular free.
J. E. Wing, 155 Schiele Ave., San Jose, Calif.

SPECIAL FOR MAY DELIVERY—One, two and three-pound packages; one, two and three-frame nuclei; three-band queens. Write for our dollar proposition. Safe arrival and satisfaction guaranteed.
Tupelo Honey Co., Columbia, Ala.

FOR SALE—Our famous Italian bees in packages, 2 and 3-lb packages with queens for sale; they are as good for honey-gathering as any bees in the U. S. A.; they are as yellow and as gentle. Our bees have stood the test all through the U. S. A. and Canada; recommended far and wide. We are free from all brood disease. Our famous Root-Howe-Davis bees that have been bred and selected from a large number of yards, will please you. Try them. We give prices on request. Some of our Wisconsin customers have written that the packages received from us in May, 1921, gave 150 pounds of honey this year. Reference, Bank of Liberty, Liberty, N. C.
H. B. Murray, Liberty, N. C.

NUCLEI and Cypress hives for 1922 delivery—Three-frame black or hybrid bees, Italian queen, $5.00; 3-frame Italian bees and queen, $5.50; 3-frame black bees and queen, $4.00; 3 pounds black bees and Italian queen on comb of honey, $5.50. Cypress hives complete; 5 10-frame, $12. Full depth supers complete, five 10-frame, $7. Prices on other sizes upon request. I own the timber and manufacture the hives, with no middlemen involved. Book orders now, so you can name shipping date to suit yourself. One-third with order to guarantee acceptance. Reference: Toombs County Bank, Lyons, Ga. Good farm for sale cheap.; 660 acres. Terms to suit purchaser. Otto Diestel, Elza, Ga.

FOR SALE—100 colonies Italian bees.
E. M. Baldwin, Union Gap, Wash.

FOR SALE—Black bees—Three pounds, $5.00, parcel post prepaid. Add price of queen wanted. Pure black queens, 60c each; hybrid 40c; tested Italian, $1.25. Safe delivery guaranteed. One-fourth down. Write me.
Carl L. Wilson Apiaries, Mount Vernon, Ga.

BEES in 2-pound packages, our specialty for 1922. Now booking orders See ad elsewhere for prices. Caney Valley Apiaries
J. D. Yancey, Mgr., Bay City, Texas.

QUEENS OF QUALITY for 1922—3-banded Italians only. After April 15, untested, $1.25; tested, $2. Satisfaction guaranteed.
P. M. Williams, Ft. Deposit, Ala.

WE are now booking orders for spring delivery of our queens and package bees. Write us for prices.
Graydon Bros.,
Rt. 4, Greenville, Ala.

1922 PACKAGE BEES and QUEENS—Untested and day-old, in Thompson safety introducing cages. Discounts on early advance orders. James McKee, Riverside, Cal.

QUEENS, package bees and nuclei. Begin shipping March 15, 1922. Circulars free. Booking orders now.
Dr. White Bee Co., Sandia, Texas.

FOR SALE—300 colonies bees in 8-frame hives; also a lot of supers, combs, and one shipping cages. Locations go with bees if wanted. Priced right.
C. H. Cobb, Belleville, Ark.

SELECT QUEENS—Choice three-band Italians, tested, $2.50; untested, $1.25. Also a few Carniolans, same price.
Geo. W. Coltrin & Son, Mathis, Texas.

FOR SPRING DELIVERY, 1922—One vigorous Italian queen, one frame emerging brood, one pound bees. Price, complete, f. o. b. Bordelonville, $5. Additional frames of brood, each $1; additional pounds of bees, each $1. Queen introduced and laying enroute to you. Safe delivery and satisfaction guaranteed. No disease. Reference given. Orders booked one-fifth down, May delivery. Send for addresses of satisfied customers.
Jes Dalton, Bordelonville, La.

BEES—100 colonies for sale.
E. F. Atwater, Meridian, Idaho.

FOR SALE—400 stands clean bees, extracting equipment; good location; for reason write.
The Oregon Apiary Co.,
Nyssa, Oregon.

WE BELIEVE we have the best Italian queens obtainable. Our new system is working wonders. Untested, $1.25; tested, $2.25; virgins, 60c. Am booking orders for 1922.
F. M. Russell, Roxbury, Ohio.

HARDY ITALIAN QUEENS, $1 each.
W. G. Lauver, Middletown, Pa.

BEES AND QUEENS from my Carolina apiaries, progeny of my famous Porto Rican pedigreed breeding stock.
Elton Warner, Asheville, N. C.

FOR SALE—Leather colored Italian queens, tested, until June 1, $2.50; after, $2. Untested, $1.25; 12, $13. Root's goods at Root's prices.
A. W. Yates,
15 Chapman St., Hartford, Conn.

FOR SALE—Root's strain of golden and leather-colored Italian queens; bees by the pound and nuclei. Untested queens, $1.50 each; select untested, $2 each; tested, $2.50 each; select tested, $3 each. For larger lots write. Circular free.
A. J. Pinard,
440 N. 6th St., San Jose, Calif.

WE are booking orders for our golden Italian queens for spring delivery after April 15. Untested queens, 1, $1.50; doz., $15; select untested queens, 1, $1.75; doz., $18; virgin queens, 1, 75c; doz., $9; tested queens, 1, $3; doz., $36. Safe arrival guaranteed.
Tillery Brothers, Georgiana, Ala.

BOOK YOUR ORDERS for QUEENS now—Goldens, $2; tested, $3; banded, $1.50; tested $2.50; six or more, 10 per cent less.
Clover Leaf Apiaries, Wahoo. Neb.

BEES AND QUEENS from my New Jersey apiary.
J. H. M. Cook,
1Atf 84 Cortland St., New York City.

FOR SALE—Burleson's three-banded Italian queens. The kind of bees that get the goods. Guaranteed to please or money back. For balance of season as follows: 1 select untested queen, $1.25, 6 for $7, 12 for $13.50, 100 or more $1 each. Send all orders, together with remittance, to J. W. Seay, manager, Mathis, Texas.
T. W. Burleson, Waxahachie, Texas.

WANTED—We have many calls from educators for copies to complete their files of the older Bee Journals. If you have complete volumes or miscellaneous numbers of any Bee Journals previous to 1900, write us, giving a list, and we will be glad to quote a price. Old bee books, now out of print, are also desirable. We act as a clearing house for this kind of materials.
American Bee Journal, Hamilton, Ill.

BEES BY THE POUND, ALSO QUEENS—Booking orders now. Free circular gives prices, etc. See larger ad elsewhere.
Nueces County Apiaries, Calallen, Texas,
E. B. Ault, Prop.

WE are now equipped to handle your early spring orders for package bees and queens, especially bred for the production of honey. Our queens are bred from the best stock obtainable, and will give satisfaction. Safe arrival guaranteed. Write for prices and terms.
Sarasota Bee Co., Sarasota, Fla.

NUCLEI—We make a specialty of shipping 2-frame nuclei. Write for special prices for June delivery. Queens at the following prices: Untested, $1.50 each; 6, $8; 12, $15; 50, $60; 100, $100. Tested queens, $2.50 each.
Cotton Belt Apiaries, Roxton, Texas.

LARGE, HARDY, PROLIFIC QUEENS—Three-band Italians and goldens, pure mating and safe arrival guaranteed. We ship only queens that are top notchers in size, prolificness and color. After June 1, untested queens $1.50 each, 6 for $8, 12 or more $1.40 each, 25 or more $1.25 each. Tested queens $3 each, 6 for $16.
Buckeye Bee Co., Justus. O.

## SWEET CLOVER SEED

HUBAM—The annual white sweet clover. Produced under garden cultivation. Guaranteed genuine Hubam seed. Cleaned, hulled and scarified, $2 per pound, prepaid.
Blair Bros., Rt. 4, Ames, Iowa.

## HONEY AND BEESWAX

ATWATER HONEY—Supply your customers.

FOR SALE — White and amber extracted honey; also comb honey. Write for prices. State quantity wanted.
Dadant & Sons, Hamilton, Illinois.

EXTRA FINE white sweet clover honey, in five-gallon cans, case of two cans, $15; one can, $8, or seven cases for $100. Sample 10c.
C. S. Engle, 1327 E. 23rd St., Sioux City, Ia.

FOR SALE—About 300 hives of Italian bees in 8 and 10-frame hives together with full equipment, all located 6 miles south of Nampa, Idaho, in good district. No disease.
Elton S. Stinson,
New Brunswick, N. J., care Woodlawn.

FOR SALE—Extracted honey, mostly amber.
Edward Hogan, Canandaigna, N. Y.,
Care Bringham Hall.

FOR SALE—100 colonies of bees.
William Judd, New London, Iowa.

FOR SALE—1,200 pounds of choice Rocky Mountain honey in new cans, 60 lbs. net, 2 in case, 9c per pound f. o. b. Hooper. Sample 10c.
H. F. Smith, Hooper, Colo.

HONEY FOR SALE—In 60-lb. tins, water white orange, 14c; water white clover or white sage, 12c; extra light amber sage, 11c; New York State buckwheat, 10c, for immediate shipment from New York.
Hoffman & Hauck, Inc., Woodhaven, N Y.

FOR SALE—New crop choice clover extracted honey, packed in *new* cans and cases, at $14.85 per case of two 60-lb. cans. A few cases of last year's clover honey at 10c. Write for price on ten or more cases of new honey.
J. D. Beals, Oto, Iowa.

MR. BOTTLER, supply your trade with the best, several tons finest extracted honey ready to ship at your command.
Bee-dell Apiaries, Earlville, N. Y.

FOR SALE—Extra fine white clover honey, in new 60-lb. cans, two to the case, at $15, f. o. b. Ruthven, Iowa.
Martin Carsmoe.

FOR SALE—Amber honey in 60-lb. cans.
P. W. Sowinski, Bellaire, Mich.

FOR SALE—Finest clover honey, packed in new 60-lb. cans and 5-lb pails. Sample 15c.
A. C. Ames, Weston, Ohio.

HONEY—SUPPLY YOUR CUSTOMERS—Finest alfalfa-clover honey, extra strong cases, case of two 5-gal. cans, $12; case of six 10-lb. pails, $7.20; case of twelve 5-lb. pails, $7.80, all f. o. b. here.
E. F. Atwater, Meridian, Idaho.

FOR SALE—No. 1 white comb, $6 per case; No. 2 white comb, $5 per case of 24 sections; six cases to carrier. Clover extracted, in two 60-lb. cans to case, 15c per pound; 5-lb. pails, $1 each, 12 to case. Amber baking honey, two sixty-lb. cans to case, 10c per pound; same honey in 50-gallon barrels. 8c.
H. G. Quirin, Bellevue, Ohio.

FOR SALE—New crop sweet clover honey in 5-lb. pails, 12 to case, 15c per lb.; 60-lb. cans. two to case, 12½c per lb.
J. P. Goodwin, South Sioux City, Neb

FOR SALE—Extra choice extracted white clover honey, put up in 60-lb. cans and 5-lb. lithographed pails. Sample 20c, same to apply on first order.
E. J. Stahlman, Grover Hill, Ohio.

FOR SALE—Extra fine Michigan white clover and basswood honey. Almost water white; indeed, I doubt if the color, body and flavor can be beaten. Put up in 60-lb. cans, 2 to the case, at 16c per pound, or in 5-pound pails, 50 to the barrel, at 17c per pound. Sample 15c.
O. H. Schmidt, Rt. 5, Bay City, Mich.

FOR SALE—Finest Michigan raspberry, basswood and clover No. 2 white comb, $5.50 per case; No. 1, $6; fancy, $6.50; extra fancy, $7. 24 Danz. sections to case. Extracted, 60-lb. cans 15c per lb. W. A. Latshaw, Clarion, Mich.

FOR SALE—Extracted honey. Write for prices. A. L. Kildow, Putnam, Ill.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendering.
Fred W. Muth Co.,
204 Walnut St., Cincinnati, Ohio.

HONEY WANTED—Give particulars in first letter. Elton Warner, Asheville. N. C.

## SUPPLIES

ATWATER HONEY—Supply your customers.

FOR SALE—Four-frame Handy reversible extractor, $26.
Lorenzo Clarke, Winona, Minn.

FOR SALE—Empty honey cans in cases, all in A No. 1 shape.
Emil Strudel,
1461 Richard St., Milwaukee, Wis.

FOR SALE—25 standard dovetailed hive-bodies, new and free from disease, $1.25 each. Thos. Cordner, Rt. 7, Sparta, Wis.

CLOSING BARGAINS—8 frames shallow extracting supers, 65c; shallow frames, 2½c; Hoffman frames, 6c; 10-frame section supers, 80c; plain section holders, 2½c; Parker foundation fastener, 20c; Alexander feeders, 20c; division-board feeders, 25c; bee escape board, 15c; single exit bee escape, 12½c; super springs, 70c per 100; tin rabbets, 8 frames, 1c each.
H. S. Duby, St. Anne, Ill.

WESTERN BEEKEEPERS—We can demonstrate that you can save money on buying bee supplies of best quality. Write for our latest price list.
The Colorado Honey Producers' Association,
Denver, Colo.

HAVE YOU any Bee Journals or bee books published previous to 1900 you wish to dispose of? If so send us a list.
American Bee Journal, Hamilton, Ill.

### MISCELLANEOUS GOODS

We list below numerous goods, very slightly shopworn, or odd stock, at prices which will save you money:

| | |
|---|---|
| 1 copy Productive Beekeeping, well bound, good as new | $1.90 |
| 13 wiring boards for Langstroth brood frames, Hoffman size, | $1.00 each |
| 1 Big Smoke smoker, 1 slight dent | $1.45 |
| 1 transformer for 60-cycle 110-volt current. | $2.50 |
| 9 10-frame Tri-State honey boards | 25c each |
| 145 fiber mats for 10-frame hives | 30c each |
| 2 8-frame moving screens for entrances of hives | 25c each |
| 5 10-frame moving screens for entrance hives | 25c each |

### HIVES AND PARTS

| | |
|---|---|
| 4 crates of 5 1-story 8-frame tri-state hives with frames | $14.28 per crate |
| 1 crate of 5 1-story 10-frame tri-state hives, with frames | $15.70 per crate |
| 5 crates of 5 No. 1 8-frame tri-state supers. | $4.15 per crate |
| 10 crates of 5 No. 1 10-frame tri-state supers | $4.55 per crate |
| 3 crates of 5 8-frame tri-state supers, with 5⅜ frames | $4.10 per crate |
| 5 crates of 5 10-frame tri-state supers, with 5⅜ frames | $4.55 per crate |
| 3 crates of 5 No. 2 10-frame dovetailed supers | $5.65 per crate |
| 3 crates of 5 10-frame dovetailed supers, with 5⅜ frames | $4.55 per crate |

23 crates of 5 8-frame 1-story dovetailed hives, with frames ........................ $11.90 per crate
1 crate of 5 10-frame dovetailed supers, 16¼ wide, for 4¼x4¾x1½ sections, $4.60 per crate
1 crate of 5 No. 3 10-frame dovetailed supers $5.65 per crate

### FRAMES

4 crates of 100 Modified Dadant extracting frames, 6¼ deep ................ $5.40 per crate
2 crates 100 Modified Dadant brood frames $6.85 per crate

### BOTTOMS AND COVERS

1 crate of 5 10-frame dovetailed bottoms, $3.30 per crate
29 crates of 5 8-frame Excelsior covers $3.12 per crate
17 crates of 5 8-frame ventilated gable covers, $3.20 per crate
1 crate of 5 8-frame dovetailed flat wood covers with inners ..................... $3.20 per crate
8 crates of 5 8-frame Colo. covers, with inners .......................................$6.00 per crate
11 crates of 5 10-frame Colo. covers, with inners .............................. $7.00 per crate
5 crates of 5 10-frame double wood covers with inners ......... .. ........ .. .... $3.30 per crate
6 crates of 5 10-frame ventilated gable covers $3.30 per crate

### SECTIONS

2 crates of 500 5¼x5⅞x2 open 4 sides sections $6.00 per crate
30 crates of 500 4¼x1¾ 2 side sections, $5.50 per crate
8 crates of 500 4¼x1 15-16 2 side sections $5.50 per crate
6 crates of 500 4¼x2 2 side sections $5.50 per crate
7 crates of 500 4x5x1⅝ plain sections $5.00 per crate
3 crates of 500 4x5x1⅜ plain sections, split $5.00 per crate
400 5¼x6¼x1⅞ sections, 2 side, all for $3.50 for lot

### SHIPPING CASES

2 crates of 10 shipping cases for12 4¼x1⅞ sections ........................................$3.00 per crate
5 crates of 50 single tier shipping cases for 24 4¼x2 sections ............................ $25 per crate
4 crates of 25 safety cases for 24 4¼x1½ sections ......................................$12.25 per crate
10 crates of 25 shipping cases, safety, for 24 4¼x1⅞ sections ......................$11.75 pe crate
1 crate of 10 safety cases for 12 4¼x1⅞ sections ............................................ $3.00 per crate
1 crate of 25 single tier cases for 24 4¼x1⅞ sections ........................................$11.75 per crate
1 crate of 10 2-tier cases for 24 4¼x1½ sections ............................................ $5.30 per crate
4 crates of 25 cases for 12 4x5x1⅜ sections $7.00 per crate
2 crates of 10 cases for 12 4¼x1½ sections $3.00 per crate

### EXTRACTORS, HONEY AND WAX

3 No. 10 extractors, never used, fine condition ................................................ $30.00 each
1 No. 15 extractor, never used, fine condition .................................................... $32.00
1 Emerson 4-frame reversible, fine condition ............................................................$60.00
1 Rauchfuss solar wax extractor, fine condition ............................................................$8.00

### HONEY PACKAGES AND SIGNS

65 cases of 2 60-lb cans, new cans, used cases $1.15 per case
16 cases 24 6-oz. glasses ................ 75c per case
3 cases 24 12-oz. jars ................ $1.25 per case
1 case 24 24-oz. jars ....................$1.75
500 1-lb friction-top cans, with lids; no bails 2c per can
1 honey sign, 25x25 in., slight bend .........$2.00

Send us your order by return mail.

DADANT & SONS,
Hamilton, Illinois.

## FOR SALE

ATWATER HONEY—Supply your customers.

FOR SALE—1900 to 1914 back numbers of Gleanings; best offer takes them. S. C. W. L. cockerels at $1.25 each.
A. H. Hattendorf, Ocheyedan, Iowa.

FOR SALE—Good second-hand 60-lb cans, two cans to a case, boxed, at 60c per case f. o. b. Cincinnati. Terms cash.
C. H. W. Weber & Co., 2163 Central Ave.
Cincinnati, Ohio.

FOR SALE, apiary—Five hundred cash, seventeen strong colonies Italian bees in Root hives, Cowan extractor, 9 gross fancy bottles, 1,000 fancy labels, 100 corrugated shipping cases; established trade. Bee pasturage all year. Cheap rent. Suburb of New Orleans, La., on car line. Opportunity for woman or elderly man. Katz, 816 Perdido St.,
New Orleans, La.

FOR SALE—Cedar or pine dovetailed hives; also full line of supplies, including Dadant's foundation. Write for catalog.
A. E. Burdick, Sunnyside, Wash.

FOR—SALE—Hamburg chickens; rare old violin. Elias Fox, Union Center, Wis.

FOR SALE—"Superior" Foundation (Weed process). Quality and service unexcelled.
Superior Honey Co., Ogden, Utah.

## WANTED

ATWATER HONEY—Supply your customers.

WANTED—Comb honey. Description and price first letter; also extracted honey; bees.
Frank Coyle, Penfield, Ill.

WANTED—High grade extracted honey, white clover preferred. Merton Church,
Highland Park, Ill.

WANTED—Our own fall crop having been a partial failure, we could use limited quantities of heartsease and Spanish needle honey. Send sample when offering and give price you expect and how put up in first letter.
Dadant & Sons, Hamilton, Illinois.

WANTED—Honey, section, bulk comb and extracted. W. A. Hunter, Terre Haute, Ind.

WE BUY honey and beeswax. Give us your best price, delivered in New York. On comb honey, state quantity, quality, size and weight of sections and number of sections to a case. Extracted honey, quantity, quality, how packed, and send samples.
Charles Israel Bros. Co.,
486-490 Canal St., New York City.

WANTED—Beeswax, also old combs and cappings to render on shares; will buy your share and pay the highest market price.
F. J. Rettig, Wabash, Ind.

WANTED—Beeswax, old combs and cappings for rendering on shares. Also wax accepted for trade. Top market prices offered.
A. I. Root Co., Council Bluffs, Iowa.

WANTED—Your order for "Superior" Foundation. Prompt shipments at right prices.
Superior Honey Co., Ogden, Utah.

WANTED—Extracted honey. Send prices and samples. Will exchange Haywood vulcanizing outfit for honey, worth $450, with tools and equipment. Chris Bahr, Cathay, N. Dak.

## MISCELLANEOUS

ATWATER HONEY—Supply your customers.

LEAGUE EMBLEMS—We still have a number of U. S. Beekeepers' emblems, buttons or pins, bronze or gold. Send 50 cents and get one
American Bee Journal, Hamilton, Ill.

## BEE JOURNAL COMBINATIONS

Knowing that our readers are interested in all beekeeping literature, we are glad to offer the different bee journals in combination with our own at a reduction that will be a saving

| | Regular Price | With A.B.J. 1 year |
|---|---|---|
| Western Honey Bee | $1.00 | $2.25 |
| Beekeepers' Item | 1.00 | 2.25 |
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| Beekeepers' Review | 1.00 | 2.25 |
| Gleanings in Bee Culture | 1.00 | 2.50 |

Canadian postage, 15 cents per year; foreign, 25 cents.

Prices quoted on all foreign bee publications on application.

**AMERICAN BEE JOURNAL**
**Hamilton, Illinois**

## SITUATIONS

ATWATER HONEY—Supply your customers.

WANTED—Salesman to sell "Desert Gold" honey. All winter position to right man. Give references and particulars first letter.
Custer Battlefield Apiaries,
Hardin, Mont.

WANTED—Position—Young man, 20, wants position with commercial beekeeper for season of 1922; 3 years' experience in beekeeping on small scale. References furnished.
Jos. C. Allen, Alpine, Ala.

## A Cinch for Beekeepers

That's what Hubam means. It makes a wonderful honey flow from early summer to killing frost; is a splendid legume for pasture or hay, and a luxuriant growth to plow under for humus and plant food. Besides this, the cash crop from the seed alone is no small item. Our average yield has been 400 lbs. per acre. Let us send you our Seed Sense magazine free. Tells all about it. We offer genuine, certified HUBAM at $2 per pound on early orders.

**HENRY FIELD SEED CO.**
**Shenandoah, Iowa**

## EVERY STEP IN BEEKEEPING

**By Benjamin Wallace Douglass**

A brand-new book based on the most up-to-date scientific information and thorough practical experience that tells how to **keep bees for profit.**

A book of directions, every step made clear, so that the beginner may start right and go forward without floundering. Delightfully written. Author was formerly State Entomologist of Indiana and has been a successful beekeeper for years.

Illustrated with thirty-one photographs. Price $2.50. Sent **postpaid on approval to any subscriber if the name of this magazine is mentioned.**

**THE BOBBS-MERRILL CO.**
**University Plaza, Indianapolis, Indiana.**

ITALIAN BEES AND QUEENS

MR. BEEKEEPER: How many crops of honey have you had cut short because your colonies were not strong enough to gather to best advantage? It will be your fault if they are not strong enough next spring, because by shaking from one-half to one pound of YOUNG ITALIAN BEES in each of them it will boost them up to where they will be strong enough to lay up the honey, if it is to be had. If you haven't already, try it.

POUND PACKAGES—NOTE, WITH QUEEN
1-lb. package, with queen, $4.00; 10 or more $3.50
2-lb. package, with queen, $5.50; 10 or more, $5.00
3-lb. package, with queen, $7.25; 10 or more, $6.75

TERMS: 25 per cent to book order.

THE STOVER APIARIES, MAYHEW, MISSISSIPPI

THE ROSEDALE APIARIES, Big Bend, La.
J. B. MARSHALL AND H. P. LeBLANC, Props.

Can supply you promptly April 15th to May 30th, 1922 with the very best Italian Bees and Queens at following prices:

1-Frame Nuclei, 1-lb. Bees $3.00
Untested Queens each 1.50
2-Frame Nuclei, 2-lb. Bees $6.00
Tested Queens each 1.75

No bee disease in territory. Health certificate goes with each shipment

SPECIAL PRICES TO LARGE ORDERS

FOOT SCRAPER FREE

We have in stock 18 Victor Foot Scrapers taken in on advertising two years ago. These sell regularly at $1.50. In order to clean them up we will send one free to each of the first eighteen persons sending us one new subscriber at $1.50, together with their own renewal.

AMERICAN BEE JOURNAL, Hamilton, Illinois

Southern Headquarters

Package Bees. Reliable Queens.

Three-Banded Italian Only

We solicit your orders for 1922 shipping. We have the stock, equipment and experience necessary to give you prompt, satisfactory service. We have more than 1,000 big, healthy, hustling colonies of pure Italian bees to draw from. Write for our illustrated price list.

W. D. ACHORD, Fitzpatrick, Ala.

5 — Good — Magazines $1

Woman's World, (Monthly)
Good Stories, (Monthly)
American Woman, (Monthly)
Mother's Magazine, (Monthly)
The Farm Journal, (Monthly)
Our Price $1.00 ALL FIVE FOR 1 YEAR

ORDER BY CLUB NUMBER 80
A Dollar Bill will do—We take the risk

Send all orders to
Whitlock & Summerhays
25 North Dearborn Street, CHICAGO

HUBAM, OR WHITE ANNUAL SWEET CLOVER

Pay your debts by growing Hubam while the seed is scarce. Contract for your seed now. Every beekeeper should grow Hubam. The best paying crop today on the farm.

E. G. LEWIS SEED CO.,
Media, Ill., U. S. A.

POULTRY
TRIBUNE

America's Leading
Poultry Paper
Showing Champions in all Breeds.

4 MONTH'S TRIAL SUBSCRIPTION 25c

U. S. Stamps accepted Practical articles by formost poultrymen. 80pp; 1 year $1.00; 3 years $2.00.
Poultry Tribune Dept. 6, Mt. Morris, Ill.

**SHE-SUITS-ME queen-bees, prices for 1921: Untested Italians, $2 each; $1.75 each for 10 or more, prior to June 15. After June 15, 1 to 9 queens $1.50 each, 10 to 24 $1.40 each, 25 and up $1.25 each.**

**ALLEN LATHAM,**
**Norwichtown, Conn.**

**WESTERN BEEKEEPERS!**

We handle the finest line of bee supplies. Send for our 68-page catalog. Our prices will interest you.

**The Colorado Honey Producers' Association, 1424 Market St.,**
**Denver, Colo.**

FOR THE FAMILY

You may have seen the family group that The Youth's Companion has chosen for its symbol. It appears on all Companion stationery and on all Companion advertising matter. It typifies the idea that The Companion stands for—the solidarity of the family. In its stories, in its articles, in its contents generally, The Companion speaks to the family, animated by the spirit that draws parents and children together round a common hearthstone, sharers in the same duties, the same joys, the same aspirations. New subscriptions for 1922 will receive:

-. The Youth's Companion—52 issues in 1922.
2. All remaining weekly 1921 issues.
3 The Companion Home Calendar for 1922. All for $2.50.
4 Or include McCall's Magazine, the monthly authority on fashions. Both publications, only $3.00.

THE YOUTH'S COMPANION,
Commonwealth Ave., & St. Paul St., Boston, Mass.

New Subscriptions Received at this Office.

**Statement of the Ownership, Management, Circulation, Etc., required by the act of Congress of August 24, 1912, of American Bee Journal, published monthly at Hamilton Illinois, for October, 1921:**

STATE OF ILLINOIS, } ss.
COUNTY OF HANCOCK. }

Before me, a Notary Public, in and for the State and County aforesaid, personally appeared M. G. Dadant, who having been duly sworn according to law, deposes and says that he is the Business Manager of the American Bee Journal, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in Section 443, Postal Laws and Regulations, printed on the reverse side of this form, to-wit:

1. That the names and addresses of the publisher, editor, managing editor and business manager are:

Publisher, American Bee Journal, Hamilton, Ill.
Editor, C. P. Dadant, Hamilton, Ill.
Managing Editor, Frank C. Pellett, Hamilton, Ill.
Business Manager, M. G. Dadant, Hamilton, Ill.

2. That the owners are:

C. P. Dadant, Hamilton, Ill.
H. C. Dadant, Hamilton, Ill.
V. M. Dadant, Hamilton, Ill
Leon Saugier, Hamilton, Ill.
L. C. Dadant, Hamilton, Ill
M. G. Dadant, Hamilton, Ill.
Jos. Saugier, Hamilton, Ill.

That the known bondholders, mortgagees and other security holders owning or holding 1 per cent or more of the total amount of bonds, mortgages or other securities, are: None.

(Signed) M. G. DADANT.

Sworn to and subscribed before me this 21st day of October, 1921.

MARY McCOY, Notary Public.
My commission expires January 17, 1924.

**FOR YOUR 1921 CROP**

Comb honey shipping cases, honey cans, friction top pails. Prices on application.

Early order cash discount on sections, hives, supers, frames, comb foundation and other goods.

Buy now and get supplies ready for 1922. Make out your list and send for our prices.

**AUGUST LOTZ COMPANY, Boyd, Wisconsin**

**IT'S HERE! WE HAVE IT!**

**QUALITY BEE SUPPLIES**

**POLISHED SHIPPING CASES**

One-piece covers and bottoms, glass and paper included, selling at cost prices, as follows:

| | |
|---|---|
| 24-lb., for 1⅞ sections, | $30 per 100 |
| 12-lb., for 1⅞ sections | $17 per 100 |

Write for illustrated catalog on our bee supplies.
We are always ready to serve you.

**CHAS. MONDENG**
**146 Newton Ave. N. and 159 Cedar Lake Rd. Minneapolis, Minn.**

**NUCLEI FOR SALE—1922 PRICES**

Experience has taught us that nuclei is the one safe way to buy your bees. Having their combs of brood, they travel more contented and nearly always arrive in perfect condition. Remember that in buying our nuclei you are not only getting two pounds of bees, but three frames of brood, which, when hatched, will double the size of the colony. Note what two large beekeepers of the North say: "I have no hesitation in recommending you as to ability to put up bees for shipment, or as to your business integrity. Of the 225 nuclei sent to date, every one came through alive and in fine condition. R. F. Holtermann, Ontario, Canada." G. E. Saunders, of Hornby, Canada, says: "Nuclei arrived in fine shape; made 100 lbs. clover honey each. Book me for 100 next spring."

PRICE LIST OF OUR GOODS

| | |
|---|---|
| 3-frame nuclei Hybrid bees, guaranteed pure Italian queen | $5.00 each |
| 3-frame nuclei Italian bees, with Italian queen | 6.00 each |
| 3-frame nuclei Black bees and Black queen | 4.00 each |
| Cypress hives, complete, crate of 5 | 12.00 |
| Medium brood foundation, per pound | .65 |

Terms, one-third down to guarantee acceptance. Safe arrival and satisfaction guaranteed.

**A. R. IRISH, Ludowici, Ga.**

**MR. BEEKEEPER—**

We have a large plant especially equipped to manufacture the supplies that you use. We guarantee all materials and workmanship. We ship anywhere. We allow early order discounts and make prompt shipments. *Write for free illustrated catalog today*

**LEAHY MFG. CO., 90 Sixth Street, Higginsville, Missouri**
**J. W. ROUSE, Mexico, Missouri** **A. M. HUNT, Goldthwaite, Texas**

**Annual White Sweet Clover Seed**

(James or Alabama Strain)

Start right. Buy your seed from the home of this New Plant.

This clover was discovered growing in Alabama by our Mr. James, in 1919.

Our crop this year was harvested without rain, and we can furnish a very high grade of seed, absolutely pure, grown by us on cultivated lands.

We are offering a limited supply at $2 per pound, delivered. This will be clean, hulled, scarified seed. Germination test must please you. Write for further information as to how to grow, etc.

**F. A. James Clover Seed Co**
Newbern, Alabama

**HONEY** FINEST Michigan Raspberry Basswood and Clover comb and extracted honey.

"SELL MORE HONEY"

| | |
|---|---|
| Crate 8 cases 24 sec. Ex. Fancy | $44.00 |
| Crate 8 cases 24 sec. Fancy comb | 40.00 |
| Crate 8 cases 24 sec. A No. 1 co'b | 36 00 |
| Crate 12 pails, 5-lb., extracted | 10.80 |
| Crate 6 pails, 10-lb., extracted | 10.20 |
| Crate 2 cans, 60-lb., extracted | 14.40 |

*Send Today for Free Sample*

**W. A. LATSHAW COMPANY, Clarion, Michigan**

**BEE SUPPLIES**

We carry a complete stock of supplies at all times, and can make prompt shipments. Our prices will interest you.

Send Us Your Inquiries
**A. H. RUSCH & SON CO.**
Reedsville, Wis.

**Shrubs and Trees**

That provide Nectar for the Bees and Fruit for the household. No Cash with order. Get our Catalog TODAY.

**PROGRESS NURSERIES**
1318 Peters Ave. Troy, Ohio

ERNEST HAMLIN BAKER

**Make it a General Order**

"Christmas Seal All Christmas Mail"

"Letters—invoices—packages—every piece of mail should bear tuberculosis Christmas Seals."

Will you issue such an order and help us continue the health work which is saving over 75,000 lives in the United States each year?

The result of this tremendous crusade amounts to an economic saving of hundreds of millions of dollars annually—a salvage that affects every business in America.

Christmas Seal your Christmas Mail

The National, State and Local Tuberculosis Associations of the United States

## HONEY CANS

Several carloads just received at our Ogden, Utah and Idaho Falls, Idaho warehouses We also manufacture shipping cases and dovetailed beehives. Special prices on request. "Everything in bee supplies." Prompt shipments

**SUPERIOR HONEY CO., Ogden, Utah**
**(Manufacturers of Weed Process Foundation)**

**HONEY** **WANTED** **HONEY**

We are in the market for both comb and extracted. Send sample of extracted, state how put up with lowest price delivered Cincinnati. Comb honey, state grade and how packed with lowest price delivered Cincinnati. We are always in the market for white honey if price is right.

**C. H. W. WEBER & CO., 2163-65-67 Central Ave., Cincinnati, O.**

**3-BANDED—20,000—LEATHER-COLORED**

## ITALIAN QUEENS FOR 1922

**4,000 PACKAGES AND NUCLEI**

SOUTHLAND QUEENS THEY EXCEL

Bred from Root Home-bred Selected Breeders—Backed by over 50 years' experience in breeding the Best, Most **Prolific** Queens of today.

**EXTREMELY PROLIFIC—BRED FOR SERVICE**

**A Few Voluntary Letters**

New Liskeard, Ont., Canada.

Your queens are the largest, finest, most prolific I have ever handled. Have purchased queens from the largest breeders in the country and yours surpass them all. They are hardy, resistant. They eat up F. F. B. Am telling my neighbors about your queens.

Slater, Wyoming, Sept. 22, 1921.

Queens arrived O. K. Received Sept. 9th. A day and a half from the time the queen was turned loose there were FOUR frames filled with eggs. Thanking you for your good queen, I remain,

Vancouver, B. C., Sept. 1, 1921.

We received the queens several days ago. I might say that while I have imported several hundred queens this year, these are the best in the leather-colored Italians that have been imported yet. The leather-colored bees are winning favor over the goldens in this province.

**20,000 QUEENS 20,000**

Untested—$1.50 12 or more, $1.25 25 or more, $1.15 50 or more, $1.00 100 or more 90c.

Tested—$2.50 12 or more, $2.25 25 or more, $2.15 50 or more, $2.00 100 or more; $1.90.

**Pound packages—Shipped on Comb of Foundation, f. o. b. Shipping Point, by Express.**

| | | | |
|---|---|---|---|
| 1-pound package, no queen, $3.00 | 25 or more, $2.25 | 50 or more, $2.15 | 100 or more, 2.00 |
| 2-pound package, no queen, 5.00 | 25 or more, 3.75 | 50 or more, 3.50 | 100 or more, 3.35 |
| 3-pound package, no queen, 7.00 | 25 or more, 5.25 | 50 or more, 5.00 | 100 or more, 4.85 |

**NUCLEI**

Good strong combs, filled with brood, same prices respectively as Pound Packages.

WE GUARANTEE SAFE ARRIVAL. MISMATED QUEENS REPLACED. BOOK YOUR ORDER NOW. OUR SUPPLY IS LIMITED

**THE SOUTHLAND APIARIES, BOX 585 Hattiesburg, Miss.**

**QUEENS**

# PACKAGE BEES

**QUEENS**

### FULL COLONIES AND NUCLEI

Our bees are hustlers for honey, prolific, gentle, very resistant to European foulbrood, our customers tell us. For years we have been shipping thousands of queens and pounds of bees all over the United States and Canada. We are continually getting letters with statements such as the following: "Well pleased with your stock; best we ever had. The bees we got from you are the tops (best) out of our 225 colonies; bees arrived in fine shape; well pleased." One customer in Canada wrote he would get over 200 pounds average this year from bees bought of me last year; another wrote he would get over 90 pounds average this year from packages bought in the spring. Write for free circular giving details, etc.

We are quoting a lower price for balance of the year, but will still hold up the high standard of Quality First. I have a good proposition for two or three Northern men wanting to come South this fall. Write for particulars.

Queens after July 1st, balance of the year:

| | |
|---|---|
| Untested | $1.35 each, 25 or more $1.00 each |
| Select Untested | $1.50 each, 25 or more $1.25 each |
| Tested | $2.25 each, 25 or more $1.75 each |
| Select Tested | $2.75 each, 25 or more $2.00 each |
| Breeders | $5.00 to $15.00 |

| | |
|---|---|
| 1 pound pkg. bees, | $2.25 each; 25 or more, $2.13 each |
| 2 pound package bees | $3.75 each; 25 or more, $8.56 each |
| 3 pound pkg. bees, | $5.25 each; 25 or more, $4.98 each |

Add price of queen wanted when ordering bees. Safe arrival guaranteed within 6 days of here.

MY FREE CIRCULAR FOR 1922 SHIPPING, quoting lower prices on package bees and queens is ready to mail. Send for one before placing your order.

## NUCEES COUNTY APIARIES, Calallen, Texas

**E. B. AULT, Proprietor**

---

# SLUM GUM AND OLD COMBS

Worked into beeswax at 5c per pound, minimum charge $1.00. Pay taken from wax.

Market price paid for the wax, worked into foundation or trade for supplies.

Working beeswax into foundation is a specialty with us.

Ship to Falconer, N. Y. Mark each package with your name and address both inside and outside.

Write for red catalog of beekeepers supplies and REDUCED price list.

## W. T. FALCONER MFG. COMPANY, Falconer, N. Y., U. S. A.

*"Where the good Beehives come from"*

---

## GOLDEN ITALIAN QUEENS

| | Nov. 1 to June 1 | | | June 1 to Nov. 1 | | |
|---|---|---|---|---|---|---|
| | 1 | 6 | 12 | 1 | 6 | 12 |
| Untested | $2.00 | $ 9.00 | $16.80 | $1 50 | $ 8 00 | $14.50 |
| Select Uotested | 2.25 | 10.50 | 18.00 | 2.00 | 9.50 | 16.00 |
| Tested | 4.00 | 22.50 | 40.00 | 3.50 | 10.50 | 36.00 |
| Select Tested | 4.50 | 25.00 | 45.00 | 4.00 | 22.50 | 40.00 |

**BREEDERS $12.50 TO $25.00**

10 per cent additional for Exported Queens. Queens for Export will be carefully packed in long distance cages, but safe delivery is not guaranteed.

NO NUCLEI, FULL COLONIES OR POUND PACKAGES.

**BEN G. DAVIS, Spring Hill, Tenn.**

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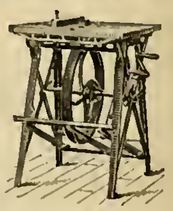
## BARNES' FOOTPOWER MACHINERY



Read what J. E. Parent, of Chariton, N. Y says:

"We cut with one of your Combined Machines last winter 50 chaff hives with 7-in. cap, 100 honey-racks, 500 frames and a great deal of other work."

**W. F. & JOHN BARNES**
**995 Ruby St., ROCKFORD, ILLINOIS**

# Crop and Market Report

**Compiled by M. G. Dadant**

## NOVEMBER REPORT

For our November report we asked the following questions of our reporters:

1. What is your total crop and how does it compare to last year?
2. What have you been selling your honey for, wholesale and jobbing?
3. Is the honey demand looking up any?
4. How much of your crop is sold?

## THE TOTAL CROP

We can do no better than give the average of figures as given by reporters on the total crop. Maine reports 70 per cent of a normal crop, Vermont 50 per cent, Rhode Island and Connecticut 50 per cent, Massachusetts 50 per cent, New York 70 per cent, Pennsylvania 150 per cent, Maryland, New Jersey and the Carolinas 10 per cent, Georgia 75 per cent, Florida 50 per cent, Kentucky and Tennessee 30 per cent, Mississippi and Alabama 50 per cent, Louisiana 125 per cent, Texas 110 per cent, Ohio 110 per cent, Indiana 100 per cent, Michigan 125 per cent, Wisconsin 75 per cent, Minnesota 80 per cent, Illinois 80 per cent, Iowa 10 to 50 per cent, depending whether on eastern or western side of the State; Missouri 50 per cent, Kansas and Nebraska and South Dakota 50 per cent, Arizona and New Mexico 30 per cent, Colorado 100 per cent, Montana 125 per cent, Idaho 75 per cent Utah 50 per cent, Nevada 80 per cent, Oregon and Washington 50 per cent, California 5 to 50 per cent.

All in all, indications are that there will not be much over 75 per cent as much honey as last season, even though we take into consideration the larger number of bees this year.

One big factor also is that some of the largest honey-producing areas have had a short crop, so that the total amount of honey entering into shipment to the larger markets will probably show a smaller percentage than mentioned above.

## PRICES OF HONEY

Two months ago the market was greatly depressed. There was a large amount of foreign honey being offered and this was having its effect on the whole honey situation. Since that time, there has been a decided change. Cuban honey is beginning to seek the European markets to such an extent that we see in the German bee papers agitation against the cheap "American" honeys which are damaging the sale of their home product.

We know of one or two cars of white honey being sold at a price ranging from 7 to 8¼ cents f. o. b. shipping point, with considerable amber honey from the west being offered as low as 6 cents f. o. b. shipping point. Comb honey is in excellent demand. Some has sold as low as $4.15 to $4.75 per case, f. o. b. shipping point for No. 1. These sales seem to have been made by the "scared" beekeeper, however, as there was no indication of such a low price being necessary to move the honey. Mostly comb is selling from $5.25 to $5.75 f. o. b. shipping point for No. 1.

Most of the prices turned in by producers would indicate that they expect to get the equal of 8½ to 9 cents f. o. b. the western shipping point, which means a basis of about 10½ to 11 cents for the easterner. These prices we believe are not out of the way, and should represent the minimum price in large lots, for white honey. Amber is still meeting the competition of the earlier cheap honey and will feel it probably for a little time yet.

## THE DEMAND

It is remarkable how replies accord as to the demand for honey. Whereas two months ago, all reporters were discouraged with the very slack demand and lack of interest on the part of the buying public, now comes the assurance that the demand is improving fast. Many report that the demand never was so good at this season of the year. This is the case in our own locality, where honey is being sold, evidently to replace the almost complete lack of any kind of fruit.

Demand seems to be slower to pick up in the larger centers, due more likely to the slowness of the jobbers to buy than to the reticence on the part of the public. We look for increased activity here as the fall develops. Comb-honey demand is good. There should be no trouble in disposing of this year's production at good prices.

## PART OF CROP SOLD

As in the previous inquiry, nearly all reporters are in accord to the effect that at least one-half the honey has been sold, this being especially true in the States of small production, where the sales are made locally and do not go through the larger distributing centers. In view of the fact that some of the later honey is no more than ready for the market now, this is a good indication. Texas, which seemed to be overstocked a little earlier in the season, is getting rid of her surplus fast and should be able to handle the bulk of her crop without trouble.

In amber honeys, it seems that the cheapest offered now are the Southern honeys, which are still very low, considering the otherwise stable condition of the market.

## SUMMARY

All in all, the honey situation appears extremely favorable.

Old stocks are now practically cleaned up and the new offerings are in good demand. The drop made earlier in honey seems to have been sufficient to create for it a demand on the part of the public. In our own locality sorghum is selling at $1.50 per 10-lb. can, while honey brings $2.25. Easy to see which will be selected by the party who has a taste for honey.

We would urge several things on the honey producer at this point. Supply your trade as long as it is possible to do so, even though it means buying honey from outside, and even though your profits on the handling are very moderate.

Get a fair price for your product, a price which will be in line with the price quoted by the larger packer, so that he may step into your market and keep it supplied continually should you run out.

Do not take advantage of the strong demand to raise prices to the point where the demand will cease, for this will mean a curtailing of consumption of honey, not only now, but for years to come. It looks as though the honey-eating public of war time was going to continue its use if given a chance by the producer and handler.

**If you want the cheapest, buy the best. I am offering to the trade of 1922 Nuclei, Nuclei and more Nuclei**

Let me prove to you that one of my 3-frame nuclei is worth more to you than a 2 or 3 pound package; besides, they cost you less.

1st. One of my 3-frame nuclei is equal to a swarm of bees, as you get young bees and brood in all stages, and the queen laying enroute.

2nd. There is no trouble about transferring them, and the bees are fresh and not worn out from fretting as they are in pound packages.

3rd. The purchaser has an absolute guarantee that they will arrive in good condition.

4th. The three combs, if empty, are worth more than the difference in the price of freight. Last season I shipped over eighteen hundred nuclei, with a loss of only two. Can the pound package shipper give such a record?

Read what one of my customers says: St. Thomas, Virgin Islands, U. S. A., June 21, 1921. Mr. A. B. Marchant, Jesup, Ga. Dear Sir: "The four three-frame nuclei arrived today in perfect order, only stores were gone, and they could not have lasted a day longer, as they were on the road 28 days." Sincerely yours, Axel Holst. The above settles the question as to safe arrival.

Now a few words about my frames and combs. My frames are genuine Hoffman wired, with shoulders cut at each end of the end bars, which makes them fit square and even.

My combs are drawn from full sheets of the famous Dadant foundation. There is none so good.

My shipping facilities are the best, having twenty or more express trains every twenty-four hours. Some of them going to New York and other points without a change.

Prices of my 3-frame nuclei, with a select untested queen, $5.50 each. Ten per cent cash with order to show good faith, balance any time before shipping.

Should a customer become dissatisfied and we cannot adjust the matter, then send your claim to the A. B. J. and I will abide by whatever they do.

My bees are all bright 3-banded Italians. A great many breeders call them goldens.

To those that have weak colonies and wish to build them up, I can furnish nuclei without queens from fifteen to twenty days earlier, price, $5 each.

I can also furnish full colonies in 8 and 10-frame hives; prices quoted on application. Shipping season depends on the weather, usually begins April 15th.

I can load a car in 48 hours, as I have over 1,000 colonies to draw from.

**My Guarantee:** Safe arrival in U. S. and Canada, free from disease, pure stock of Italians, quick and prompt service, and a satisfied customer.

THE NUCLEI MAN.

**A. B. MARCHANT, Jesup, Georgia**

**PATTERSON & WINTERS**

**QUEENS**

**Early Order Discounts for 1922 on Queens and Package Bees**

Orders received during November, 1921--10%
Orders received during December, 1921-- 8%
Orders received during January, 1922-- 6%
Orders received during February, 1922-- 4%
Orders received during March, 1922----- 2%

One fourth cash with order, balance before shipment.

QUEENS

| | |
|---|---|
| 1 untested Queen $1.25, 25 or more | $1.00 |
| 1 tested Queen $2.50, 25 or more | 2.25 |
| 1 select tested Queen, $3.00, 25 or more | 2.50 |

NUCLEI

| | |
|---|---|
| Two-comb regular Nuclei | $3.60 |
| Twenty-five or more | 3.45 |

PACKAGES

| | |
|---|---|
| One 2-lb. package, $3.60; 25 or more | $3.45 |
| One 3-lb. package, $5.00, 25 or more | 4.75 |

Add price of queens wanted when ordering above packages.

**PATTERSON & WINTERS, Jourdanton, Tex.**

**References: Adams Nat. Bank, Devine, Texas; Atascosa State Bank, Jourdanton, Tex.**

**3-Banded Queens, Package Bees, Golden Queens**

We are booking orders for 1922 delivery. Do not care to accept any more business for 1921 delivery after September 10. We wish to thank our many friends for their kind and, indeed, generous patronage during the present year, and we hope to serve them even better the coming season, 1922. Our bees and service will be better the coming year than ever before. Let us know your wants and get our lowest prices, delivered, safe arrival and satisfaction guaranteed.

**M. C. BERRY & CO.**
**HAYNEVILLE, ALA., U. S. A.**

**OUR BACKDOOR NEIGHBORS**

**BY FRANK C. PELLETT**

A book of fascinating stories of animal life. Will delight the children and please the grown folks. Illustrated with many photographs from life.

**PRICE $1.50 POST PAID**
**AMERICAN BEE JOURNAL**
**HAMILTON, ILL.**

**BEEKEEPERS** WE MANUFACTURE DOVETAILED HIVES, HOFFMAN FRAMES, SECTIONS AND SHIPPING CASES

Our hives are made of best grade White Pine, cut accurate and smooth to standard measure. Sections are made of Basswood polished on both sides. There are no better made.

We carry a complete line of everything used in the apiary. Our shipping facilities are as good as can be found anywhere. We want your business. We guarantee prompt and satisfactory service. Price list free.

**MARSHFIELD MANUFACTURING COMPANY, Marshfield, Wis.**

**PACKAGE BEES FOR 1922**

We Specialize on Three-band Italians Bred for Business.

A 2-pound package of our hustlers with a select untested queen for $5; 25 or more, $4.75 each. Special prices on large lots. One-fifth cash books your order. Order early and make sure of shipping date. We do not accept more orders than we can fill promptly.

**CANEY VALLEY APIARIES, Bay City, Texas**
**J. D. YANCEY, Mgr.**

QUALITY
TIN CANS
FIRST
For PACKERS and MANUFACTURERS of
FOOD PRODUCTS
LARGE CAPACITY
LONG EXPERIENCE
YOUR INQUIRIES SOLICITED
W. W. BOYER & CO. INC.
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The Honeybee, by Langstroth and Dadant. 575 pages, 229 illustrations. Cloth $2.50.
Outapiaries, by M. G. Dadant. 125 pages, 50 illustrations. Cloth $1.
1000 Answers to Beekeeping Questions, by C. C. Miller. 276 pages, illustrated. Cloth $1.25.
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**HAMILTON, ILL.**

**PORTER** **BEE ESCAPE SAVES HONEY TIME MONEY**

PORTER
BEE ESCAPE
PATENTED

**For sale by all dealers**
**If no dealer, write factory**
**R. & E. C. PORTER, MFRS.**
**Lewistown, Illinois, U. S. A.**
(Please mention Am. Bee Journal when writin

## ELECTRIC IMBEDDER

**Price without Batteries,$1.50**
Not Postpaid.

Actually cements wires in the foundation. Will work with dry cells or with city current in connection with transformer. Best device of its kind on the market.

**For sale by all supply dealers.**

**Dadant & Sons,** Manufacturers HAMILTON, ILL.

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## "QUEENS"

We are now booking orders for 1922

**Price List**

Before August 1st:

| | |
|---|---|
| 1 to 4, inclusive | $2.50 each |
| 5 to 9, inclusive | $2.45 each |
| 10 or more | $2.40 each |

After August 1st:

| | |
|---|---|
| 1 to 4, inclusive | $2.00 each |
| 5 to 9, inclusive | $1.95 each |
| 10 or more | $1.90 each |
| Breeding queen, whole season | $10 each |

**JAY SMITH, Route 3**
**VINCENNES, IND.**

---

## 1922

Place your order now for 1922 delivery of

FOREHAND'S THREE-BANDS
The Thrifty Kind

They are surpassed by none, but superior to many.

Package Bees. Three-band Queens

Write for prices now.

**W. J. FOREHAND & SONS**
Fort Deposit, Ala.

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## 5 REASONS WHY—

**YOU WILL WANT**

**TO SEND US THE**

**COUPON AT ONCE**

*Money Saved is Money Made*

The A. I Root Co. of Iowa,
Council Bluffs, Ia.

Gentlemen: Kindly name your fall prices of the following:

1. Eight-frame hives, metal covers, complete, sets 5 KD.
2. Eight-frame bodies, with frames, complete, sets 5 KD.
3. Shipping cases, lots of________
4. Cans. jars, pails and second-hand 5-gallon cans.
5. Honey tanks.

Name ________________

Address ________________

City ________________

State ________________

**THE A. I. ROOT CO. OF IOWA**
**COUNCIL BLUFFS, IOWA**

# Lumber that Lasts?

## Here's a Convincing Case of an Experienced Beekeeper who—

CYPRESS DEFIES DECAY

CYPRESS LASTS PRACTICALLY FOREVER

**(But let the gentleman tell it himself:)**

*BUCK GROVE, IOWA, February 2, 1916.*

*"I have been a Cypress man for lo, these many moons. Almost all my dovetail hives are of Cypress, as are bottom-boards, and I think, shallow telescope covers. My hive stands are of Cypress, and stand in the mud and wet all the time and are as solid as when I got the first one some years ago. Cypress is a trifle heavier than white (cork) pine, but not much more than the heavier grade of pine now used. The fact that it is 'everlasting' compensates for all this." (Signed) A. F. BONNEY, M. D.*

For a job of repairing or for equipment, the lumber that will give you the greatest real investment value in the market is Cypress, commonly known as the "Wood Eternal." This wood does not rot down like most woods; it lasts and lasts and LASTS, and LASTS and LASTS. It is the Gopher Wood of the Bible—Noah built his ark of Cypress. Since the days of Noah, Cypress has been famous for endurance under the most trying conditions. **Cypress is the one certified Greenhouse wood. That's "some" test. Bottom boards are another.**

## GET A BOOK—IT IS FREE

There are 42 volumes in the internationally famous Cypress Pocket Library, and each is authoritative in its field, and all are FREE. Vol. 1 is the U. S. Gov't Report on Cypress—that is a good authority, surely. Vol. 4 is the Barn Book, with plans and specifications for building. Vol. 36 is the Carpentry Book, making easy a dozen hard jobs of carpentry. Vol. 19 is the Canoe and Boat Book. Vol. 37 is the Silo Book. All are free for the asking. Suppose you ask for one or a dozen, right away.

## WORTH INVESTIGATING

This Cypress wood matter is worth investigating. Just write our "All-round Helps Department."

**SOUTHERN CYPRESS MANUFACTURERS ASSOCIATION**

1251 GRAHAM BUILDING, JACKSONVILLE, FLA.

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FOR QUICK SERVICE, ADDRESS NEAREST POST OFFICE

# DO YOU USE ALUMINUM HONEYCOMBS?

## IF NOT, WHY NOT?

**Each comb is in itself a valuable asset to any apiary. It is the only comb which enables BEEKEEPERS TO OBTAIN ALL THE HONEY without waiting for the bees to draw out foundation. THEREBY SAVING TIME AND MONEY.**

**We can prove that no practical BEEKEEPER can afford to be without the ALUMINUM HONEYCOMB**

In a recent issue of a National Bee Publication the following question and its answer appeared:

Q. What is the total cost of a fully drawn out wax comb?
A. The mininum cost of drawing out a wax comb is 50 cents.

PRACTICAL BEEKEEPERS are buying ALUMINUM HONEYCOMBS because they

Cannot be destroyed by moths or rodents
Make extracting of honey easy
Control production of drones
**Can be sterilized**
Prevent loss by melting
Increase production
Last forever with reasonable care
**Cost no more than wax combs**

**THE DIAMOND MATCH CO., Apiary Dept., CHICO, CAL.**

**Sole distributors for DUFFY-DIEHL, Inc., Pasadena, Cal**

# Why Buy Now?

There are two good reasons for buying your bee supplies now:—

1. **By so doing you will save money.**
2. **By buying now you can be putting your supplies together and getting them all ready this winter, so as to be prepared when they are needed in the spring.**

## WHY YOU WILL SAVE MONEY BY BUYING NOW

Our recent sharp cuts in prices of supplies were much greater than today's costs justify. Some materials are actually advancing again. It is our honest belief that prices will not go any lower. But the biggest reason why you will save money by ordering now is on account of our **early order discount.**

**5% for November**
**4% for December**

This **early-order cash discount** is bound to save you money. We give this discount now in order to stimulate trade during an otherwise dull period, thereby keeping our plant going to capacity to decrease burdens and overhead, and enabling us to sell our goods to you for less money. **Help us to help you. It will pay you to order now and take these discounts.**

**Business confidence is returning. Trade will be brisk next spring. Don't get caught in the rush. The late ones always get caught and have to wait. Delay during the honeyflow is needless waste and expense.**

*There is a Root Dealer near you*

For your convenience and in order to save you on freight, the following distributing points are maintained:

New York
Philadelphia
Norfolk
Savannah
New Orleans
San Antonio
Los Angeles
San Francisco
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Chicago
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## THE A. I. ROOT COMPANY
MEDINA, OHIO

*Fifty Years in the Bee Supply Business*

# AMERICAN BEE JOURNAL

DECEMBER, 1921

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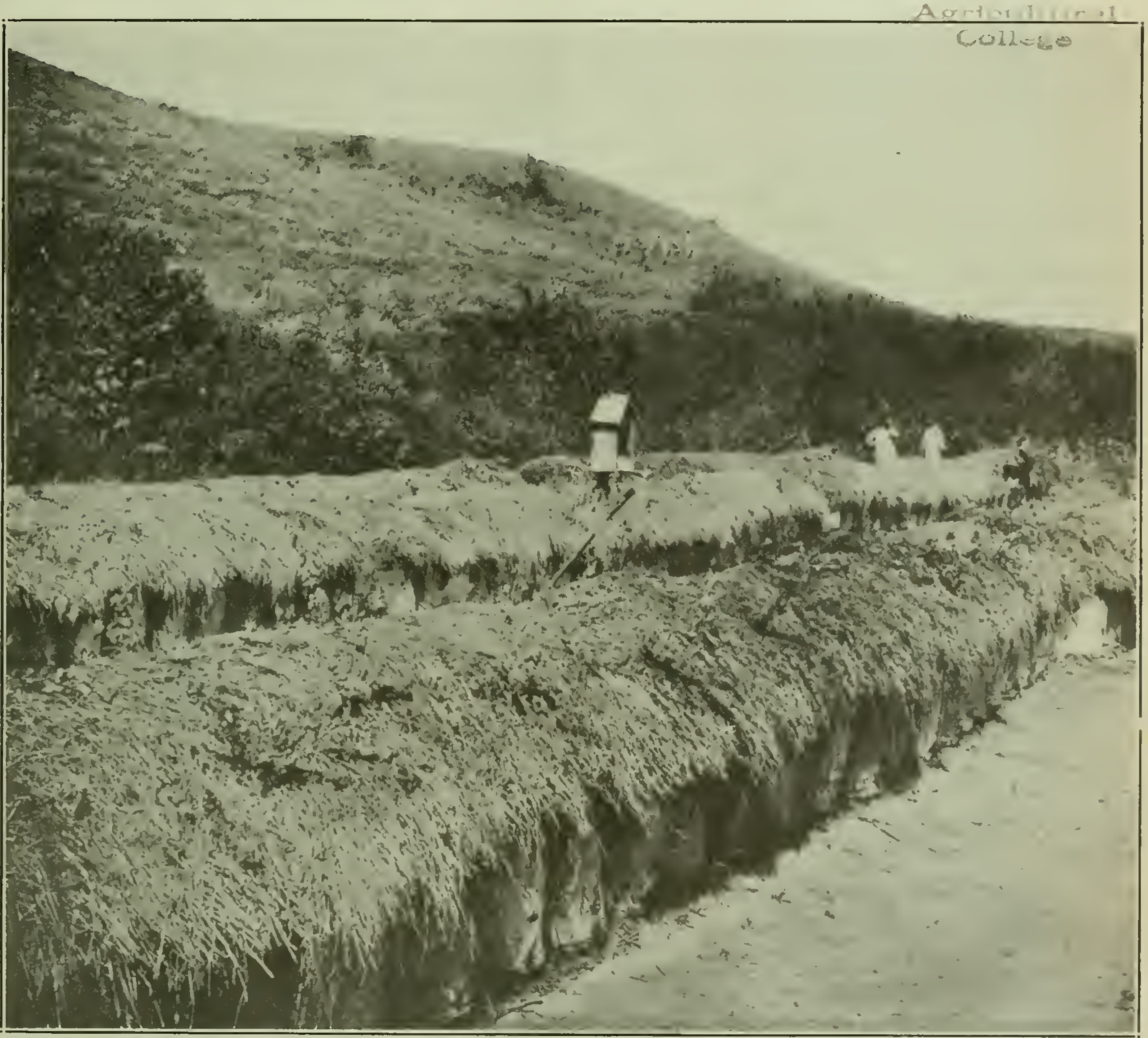

APIARY OF CYLINDRICAL HIVES SHELTERED WITH STRAW IN TERSK DISTRICT, CAUCASUS

# HAVE YOU SOLD YOUR HONEY?

We are buying **Comb** and **Extracted** honey. Send us a sample and tell us what you have to offer. Name your most interesting price delivered to Cincinnati. Remittance goes forward the day shipment is received

Old comb—Don't forget we render wax from your old combs and cappings. Write us for shipping tags

We offer you friction top cans

| | | |
|---|---|---|
| 2½ lb. cans | $ 4.25 per 100 | $ .50 per 10 |
| 5 lb. cans | 8.00 per 100 | 1 00 per 10 |
| 10 lb. cans | 12.00 per 100 | 1.40 per 10 |

1 lb. Round Screw Top Jars, 2 dozen in shipping case, 10 case lots
$1.60 per case

Prices cash with order, f. o. b. Cincinnati

**THE FRED W. MUTH CO., Cincinnati, Ohio**
**PEARL AND WALNUT STREETS**

# THE DIAMOND MATCH CO.

(APIARY DEPT.)

MANUFACTURERS OF

**Beekeepers' Supplies**

CHICO, CAL., U. S. A.

Dadant's incomparable Foundation is always kept in stock. Western Beekeepers can be supplied advantageously.

BEEKEEPERS, wherever they may be located, before deciding where to obtain supplies, should write to the Diamond Match Co. for prices and for their Beekeepers' Supply Catalog.

This Company are the largest manufacturers in the world who make Bee Supplies. They own their own timber lands, mills and factories, and supply goods direct from the tree to the beekeeper.

Full advantage of this low cost of production is given to the purchaser.

The Apiary Department (which is in charge of experienced supply men, who are also practical beekeepers) maintains a constant excellence of product and offers unsurpassed service.

**ALUMINUM HONEYCOMBS**

The Diamond Match Co. and their agents are the sole distributors in the United States of the Aluminum Honeycombs, manufactured by the Duffy-Diehl Co., Inc., of Pasadena, Calif. Write for descriptive pamphlets. Eastern beekeepers should send their orders for the Diamond Match Co.'s supplies to **Hoffman & Hauck, 1331 Ocean Avenue, Woodhaven, N. Y.**

**DIAMOND MATCH CO., Apiary Department**
**CHICO, CALIFORNIA**

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**BEST GOLDEN ITALIANS**

**BEN G. DAVIS** SPRING HILL, TENN.

**NUCLEI FOR SALE**

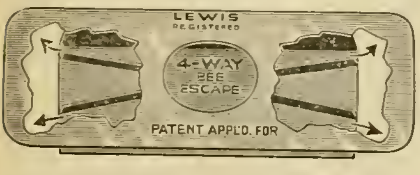
Book early to get the best shipping dates. My bees are three-banded leather-colored Italians. They are disease-resisting and the best of honey gatherers. They winter well.

1922 PRICES

2-frame nuclei ............$3.50 each
3-frame ............4.50 each
If queen is wanted add $1
Satisfaction guaranteed; no disease.
Terms, 25 per cent with order, the balance 15 days before shipping. Delivery after May 15.

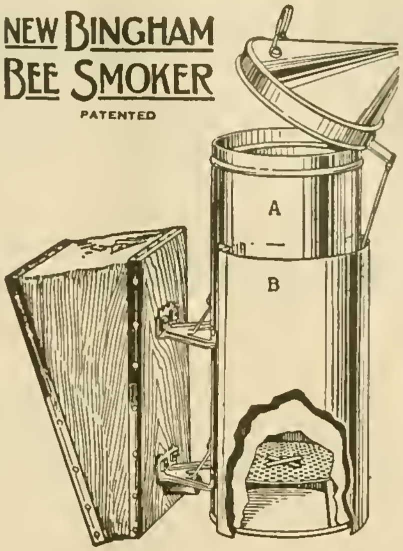
**J. B. SANDERSON, Fredericksburg, O.**

**Lewis 4-Way Bee Escapes**



Four exits from supers Fits all standard boards Springs of coppered steel. Made of substantial material. Price each 20c, postpaid

Made by
G. B. LEWIS COMPANY,
Watertown, Wis., U. S. A.
Sold only by Lewis "Beeware" Distributors.



**BINGHAM BIG SMOKE SMOKER**

**Wins contest at New York State Beekeepers July meeting**

Gilberts.ille, N. Y., Oct. 3, 1921.
A. G. Woodman Co.:

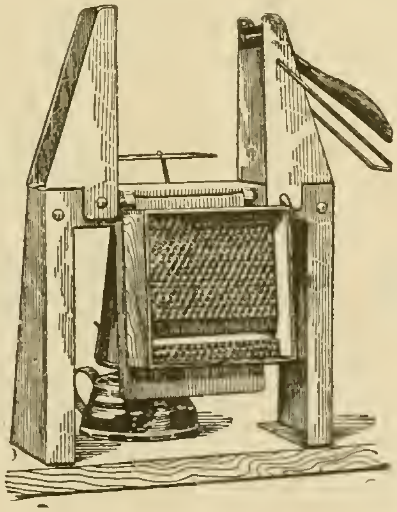
Last winter I bought a copper Big Smoke Smoker, with shield, of you, and in July took the same to the Chenango County beekeepers' picnic and entered the smoker contest. There were nine contestants and the Big Smoke won the prize, which was a fine queen bee. Needless to say, I was very proud of the victory. They gave us one minute, and at the expiration of thirty-five minutes the Big Smoke was the only one burning. They called it a "Steam Boiler." However, it won, and I thought I would inform you.

C. F. Bushnell.

The contestants were allowed to use any fuel they desired, and as much or as little of it as thought advisable. The contestants were given one minute in which to light their smokers, then let set for thirty minutes. At the end of this period, the one that smoked best in thirty seconds won the prize.

**Buy Woodman Section Fixer**

One of our men with the section fixer puts up 500 sections with top starters in one hour and thirty minutes; 500 sections set up with top starters in ninety minutes. This includes the labor of cutting foundation, getting sections and supers and placing the sections into the supers and carrying them away. A complete job. This is nothing unusual, but his regular speed. You can do the same if you have the push, after you become accustomed to the work. There is no breakage of sections. It will pay you to secure one of these machines for this work. It is the best thing of the kind on the market



|  | Size of stove. inches | Shipping weight. lbs. |
|---|---|---|
| Big Smoke, with shield | 4 x10 | 3 |
| Big Smoke, no shield.... | 4 x10 | 3 |
| Smoke Engine ............ | 4 x 7 | 2¼ |
| Doctor ............ | 3½x 7 | 2 |
| Conqueror ............ | 3 x 7 | 1¾ |
| Little Wonder ............ | 3 x 5½ | 1½ |

**SPECIAL SALE ON HONEY PACKAGES**

Friction top pails in the 5-pound, at $7 per crate of 100; $13 for crates of 203; the 10-pound size at $11.30 for crates of 113. Special prices on 60-pound cans, one-gallon square cans and other sizes.

**A. G. WOODMAN CO.**
GRAND RAPIDS, MICH., U. S. A.

A SUPERIOR QUALITY
AT LESS COST

# SUPPLIES

A SUPERIOR QUALITY
AT LESS COST

**THE SPECIAL PRICES LISTED BELOW ARE GOOD UNTIL DECEMBER 31, 1921**

Hives, Supers, etc., listed below are in the flat, and are complete with Hoffman Frames, nails, metal rabbets and all inside fixtures
Made by the Diamond Match Co.

### ONE-STORY DOVETAILED HIVE

| | |
|---|---|
| Five 8-frame | $10.50 |
| Five 10-frame | 11.00 |

### SHALLOW EXTRACTING SUPERS

| | |
|---|---|
| Five 8-frame | $4.00 |
| Five 10-frame | 4.50 |

### FULL-DEPTH SUPERS

| | |
|---|---|
| Five 8-frame | $5.00 |
| Five 10-frame | 5.50 |

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¶ And unless the Honey is at all times uniform in color and flavor, customers sometimes become dissatisfied.

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# ALTITUDE AND SECRETION OF NECTAR

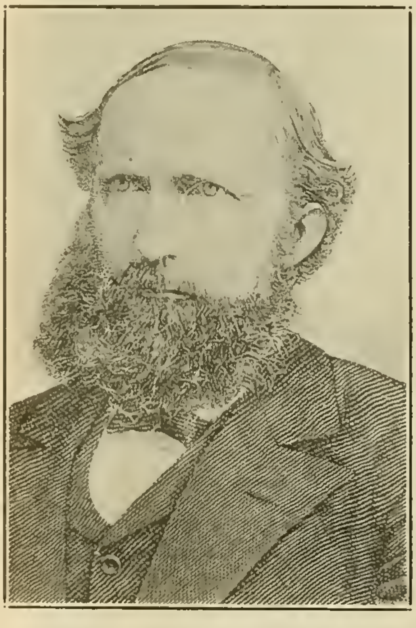
## An Account of the Effect of Elevation, Temperature, Etc., on the Amount of Nectar Available to the Bees.—By John H. Lovell.

THE secretion of nectar is at once one of the most interesting and baffling functions of plant life. The older flower biologists, Mueller and Kerner, describe the nectaries and their position at great length, but of the relation to the soil, climate and temperature to secretion they knew little. We suspect that Mueller would have been not a little astonished had he been told of the vagaries of alfalfa and white clover in the production of nectar. Most of our information on this subject is due to the observations of beekeepers, and will be found recorded in the files of the bee journals. A large amount of data has been accumulated as to the facts, but the influence of the various factors is still very imperfectly understood.

### Similarity of Conditions in Mountainous and Arctic Regions

The effect of altitude on the secretion of nectar has lately been the subject of frequent discussion, and it is proposed in this paper to briefly review conditions prevailing in Alpine regions. It is a problem of great practical as well as theoretical interest to the beekeeper. As nearly the same conditions prevail at high latitudes as at high elevations, it is desirable to compare the floras of these two regions. In both Alpine and Arctic districts the plants are exposed to low temperature and intense light. At an elevation of a mile or more the air is less dense, or thinner, and intercepts less sunlight than in the plains. As we advance in the summer toward the North Pole the days become longer and the earth receives more of the sun's rays than farther south. In both cases, also, the cold gradually increases until plant life practically disappears. Mountain regions differ chiefly from northern regions in that the pressure of the air is less in the former than in the latter.

The two regions agree again in that both have short summers, and vegetation is obliged to "hurry up" in order to flower and fruit before winter. In Alpine districts the flowering period is very short, not lasting more than two or three months. Spring beauty (**Claytonia**) and dog-tooth violet (**Erythronium**), plants which in the lowlands bloom in April, do not bloom until June in Alpine meadows. But the Alpine season soon catches up with that of the lowlands, and in August is ahead of it, goldenrod and gentians blooming earlier in the mountains than in the lowlands. The same thing occurs in high altitudes, as in Alaska and Scandinavia, and barberry ripens ten days earlier in northern Norway than in southern Sweden.


Hermann Mueller, author of "Flowers of the Alps" and of the "Fertilization of Flowers"

### Alpine and Arctic Flowers

Thus in Alpine regions there is no spring and no autumn, only a short summer, followed by a cold winter. All the flowers must blossom in a short time, and almost simultaneously there appear a great variety of colors, as yellow five-fingers, blue gentians, red pinks and primroses, and saxifrages in every color. There is the same remarkable variety of hues in an Alaskan meadow. After his visit to Alaska glaciers, Burroughs wrote of the meadows:

"Starred with flowers of every hue,
Gold and purple, white and blue,
Painted cup, Anemone,
Jacob's ladder, fleur-de-lis,
Orchid, harebell, shooting star,
Crane's-bill, lupine, seen afar,
Primrose, poppy, saxifrage,
Pictured type on Nature's page."

For six summers Hermann Mueller investigated the flowers of the Alps, and then published the results of his observations in his book "Alpenblumen," or "Flowers of the Alps." Mueller, indeed, died in the Tyrol. On the day of his death he had written a long letter to his son, and he had no premonition of his fate. Suddenly, on the 25th of August, 1883, a pulmonary attack closed his useful life. It was fitting that a life devoted to the study of highland flowers should come to its close among them. According to Mueller, many flowers of the Alps have brighter colors, secrete more nectar and are more strongly scented than the same species growing on the plains. Examples will be given later.

According to Schuebeler, who made many observations, the flowers and fruits of Scandanavia are brighter colored and have a stronger fragrance than those in lower altitudes. Sufficient evidence has been given to show that the conditions in mountainous or Alpine sections, and in northern regions, are very similar, and affect the flowers in both regions in much the same way.

### Altitude and Nectar Secretion

At this point, before inquiring into the agencies affecting nectar secretion, let us establish the fact that flowers at high elevations and high latitudes tend to secrete nectar more freely than in opposite situations. Mueller states that in the lowlands the spur of an orchid (**Platanthera solstialis**) was only about a third filled with nectar, but that in the Alps it was over half full. According to Bonnier and Flahault **Silene inflate,** one of the pink family, was much richer in nectar at an elevation of 5,895 feet than at an elevation of 1,300 feet. They also cite the statistics gathered by the French Department of the Pyrenees, from which it would appear that the average honey production per colony was from sea-level to 1,000 feet, 6 lbs. 10 oz., and that with every rise of 1,000 feet it increased from 2 to 4 pounds per colony, until at 4,000 to 5,000 feet it was 19 lbs. 13 oz. ("Alpenblumen, p. 564). It is difficult to decide just how much importance is to be attached to these figures in the absence of full data, but they certainly point to a more abundant nectar secretion with an increase in altitude.

In California, Dr. Phillips was informed by several prominent beekeepers that with an increase of altitude the sages yielded larger crops of honey. According to Mr. Frank C. Pellett, in this State, the sage flow is reported to be much more dependable at higher elevations. Mr. M. C. Richter, the well-known author of the Bulletin on California Honey Plants, writes, "There is a great deal of evidence pointing to a more profuse nectar secretion at higher elevations." A beekeeper at Grand Junction, Colo., in June, 1919, wrote to the author that while three of his apiaries were getting barely enough nectar to keep them alive, three others 1,800 feet higher and 35 miles away, had filled the supers, and he was extracting a good crop. "In the lower valleys alfalfa has not amounted to much for some years, and most of the honey has been secured after August 1."

Blossoms of alfalfa

On the effect of altitude on the secretion of nectar by alfalfa, in Kansas, some very interesting observations have been made by Mr. A. V. Small, of Augusta. He writes: "Where the river valley of the Kansas River is above 1,000 feet, alfalfa in Kansas is one of the major honey plants; but, where the valley is below 1,000 feet it is one of the minor honey plants, practically ceasing to yield between 800 and 900 feet." The valley at Topeka has an elevation of about 900 feet and here alfalfa is valueless as a source of nectar. Fifty miles westward, Manhattan, on the same river, has an elevation of 1,000 feet, and bees work on alfalfa freely. The 1,000-foot elevation line runs from Atchison, in the northwest corner, in a very irregular series of curves and loops to Sedan, near the south border line. Small says that he has checked the effect of altitude on nectar secretion back and forth across this line and the conclusion given above holds with remarkable accuracy.

Why does alfalfa in eastern Kansas cease to yield nectar between 800 and 900 feet, but becomes a good honey plant above 1,000 feet? As it would seem that so small a difference in altitude could not so greatly affect nectar secretion, it is of much inter-

Blossoms of the heather. This shrub covers thousands of acres of moorland in Scandinavia and Great Britain. In England, during a two-years record, a hive on scales showed the greatest yield on a day which began with a heavy early morning frost.

est in this connection to record a similar case in eastern Maryland. The following observations by Dr. Phillips on the secretion of nectar by tulip-tree have, I believe, never before been published: "Tulip-tree grows in association with chestnut, oak, walnut, hickory, maples and beech, and sometimes with scrub pines. Its chief importance as a honey plant is in Tennessee, Kentucky and the Carolinas, and the Ohio Valley. In Virginia and Maryland it is perhaps less abundant, although near Washington, above the fall line, it is sufficiently abundant to give a regular honey crop. We never secured a crop from this species when our apiary was below the fall line, in the city, or at Arlington, Va., or College Park, Md."

Blossoms of white sweet clover

The "fall line" is the line separating the Coastal Plain from the Piedmont Plateau, or the line where the tidewater rivers cease to be navigable. In Virginia this ascent ranges from 100 to 200 feet, but in eastern Maryland it is probably less. It is noteworthy that in the higher part of the city of Washington tulip-tree yields well, but not in the lower part.

The obvious explanation of the secretion of nectar by alfalfa and tulip-tree at higher altitudes, in the localities mentioned, would seem to be the decrease in atmospheric pressure. At Alpine heights the evaporation of water vapor by leaves is hastened by the thinness of the air. But it may be urged with much force that a rise of only one or two hundred feet would make little difference in air pressure. As a matter of fact 100 feet would cause a decrease in air pressure of only a little more than eight-tenths of an ounce per square inch. Moreover, under favorable conditions, the secretion of nectar by alfalfa is largely independent of air pressure, since in Imperial Valley, California, 200 feet below sea level, it yields immense crops of honey. In Kansas the good alfalfa pasturage for bees is restricted to the narrow stream valleys, while the uplands, no matter how great their elevation, yield little nectar, owing to the small rainfall. A beekeeper at Oshkosh, Neb., on the Platte River, writes that although sweet clover and alfalfa are abundant at an altitude of nearly 4,000 feet, the air is so dry that little nectar is secreted, and that his experience in beekeeping has been a failure. The small amount of experimental evidence available is not very satisfactory; but, so far as it goes, it points to no relation between atmospheric pressure and nectar secretion. But according to the 29-year record at Clarinda, Iowa, a low barometer apparently favored honey production. Any definite conclusion until more data is obtained, seems, therefore, impossible. It is by no means improbable, assuming all other factors to be favorable, that a slight change in air pressure might start nectar secretion, for example, when the cells of the nectary are overfilled with water and the elastic walls of the cells are under great strain.

### Red Coloration and the Sugar Content of Alpine Plants

Very conclusive evidence that plants at Alpine heights produce more sugar than in the lowlands is shown by the great amount of red and purple coloration they contain. Mueller ("Alpenblumen", p. 563) gives a list of flowers which contain more and brighter red and blue pigments than the same species contain in the lowlands. But the red coloration is by no means confined to the flowers; it

Blossoms of the barberry (*Berberis vulgaris*). A Northern shrub which blooms earlier in Arctic regions than further south extends to the leaves and stems. Kerner sowed the seed of summer savory, in an experimental garden at a height of 7,100 feet above sea level, in the Tyrol, and the plants developed coloring matter in extraordinary abundance, and not only the leaves but the stems became a dark violet.

Red coloration is due to a liquid known as anthocyanin. When this liquid is acid it is red, but when alkaline, blue. A red rose may be changed to a blue one by dipping it in a weak alkali, and again turned back to red by dipping it in a weak acid. Overton has shown by many experiments that the production of red coloring depends on three factors: intense light, low temperature, and a cell-sap rich in sugar. Cut stems of lilies and other land plants would not develop red coloration, when placed in solution, until 2 per cent of an invert sugar (grape sugar) was added. Red coloring appeared then in great abundance. The large amount of red coloring in Alpine plants is conclusive evidence that they produce more sugar than lowland plants, and they would, therefore, be likely to secrete more nectar.

Since, therefore, according to evidence supplied by many investigators, plants secrete a greater amount of nectar at a high than at a low altitude, and since this view is substantiated by the presence of a large amount of red coloring matter, further discussion of this point seems unnecessary. We may accept it as proven that a high altitude, up to at least 7,000 feet, is favorable to nectar secretion.

### Latitude and Nectar Secretion

Let us next consider whether a high latitude is favorable to an increased secretion of nectar. With the exception of a rarified atmosphere essentially the same conditions as to a large amount of light and low temperature prevail in northern as in Alpine regions. The many hours of daylight permit the plant to manufacture food for a much longer time than further south. Experiments in illuminating plants with electric lights show that they do not require a rest at night, and that with more light they can be forced to do more work. In the spring and early summer, and in late autumn, the nights are colder than the days. This is often also true of nights in midsummer. "The north," says Sladen, "is particularly well adapted for beekeeping, as the warm days and cool nights favor nectar secretion, while the long working day increases the crop. In favorable seasons 200 pounds of clover honey per colony is common near Lake Temiskaming. At Roberval, on Lake St. John, Quebec, an average annual colony yield of 200 pounds is obtained from alsike and white clover." (In MS.) In the case of no honey plant is the effect of latitude so well shown as in white clover. In Michigan, Wisconsin and southeastern Minnesota it is a very reliable honey plant. (See American Honey Plants, p. 277). A beekeeper in Fillmore County, Minnesota, writes that a complete failure of white clover has not been known in that locality for 20 years. It is a much better honey plant there than in either Illinois or Iowa, where good crops of honey are secured on an average only about 2 years out of 3. Farther south, white clover is a very unreliable source of honey, although it may occasionally yield a large surplus. Undoubtedly the goldenrods are far better honey plants in Canada and New England than farther southward. The wild raspberry in Michigan, Hutchinson says, never fails to produce honey, and he has seen bees working well upon it, when the weather was so cool that clover would not yield a drop of nectar. No plant was known to him which yielded more honey in a season than great willow-herb (**Epilobium angustifolium**), in northern Michigan, but farther south, in Tuscola County, where it was also very abundant, it did not yield a pound of honey. The northern climate, and perhaps soil, were required to stimulate nectar secretion. For four consecutive years a good crop has been obtained at Melford, northern Saskatchewan, mainly from willow-herb. This plant will yield nectar with a cold wind blowing from the north that would stop all storing from basswood and white clover. Willows, blueberries, Labrador tea and asters all yield well in the North. High altitude is evidently favorable to an increase in nectar secretion. But the number of species of flowers in Arctic lands is much less than in Alpine regions; for example, 60 genera of plants are known in the Alps which do not occur north of the Arctic Circle.

Field goldenrod. A species which blooms early and does not yield nectar freely

### The Effect of Intense Light

Soils and rainfall are undoubtedly important factors in determining nectar secretion, but as they are common to the lowlands as well as to Alpine districts; and to the tropics as well as to northern regions, they will not be considered in this paper. It may be well, however, in passing, to say that according to Prof. Fernald, the distribution of Alpine plants on the mountains of New England and eastern Canada is determined by the composition of the soils, according as they are derived from rocks containing potash, lime, or magnesia. Two factors of great importance in both mountainous and northern areas are light intensity and low temperature, and to these we shall confine our attention. The secretion of nectar is closely related to the amount of light the plant receives. The force or energy required for the manufacture of food material is furnished by sunlight. It is the power which drives the plant, just as the electric current is the power which drives the motor. Deprive the plant of light, and the sugar reserves will soon be consumed and nectar secretion will cease. Kenoyer placed buckwheat flowers under both light and dark jars, and after two days the amount of sugar in the nectar of the flowers under the dark jar began to decrease. After four days approximately only one-fourth as much sugar was secreted per flower. He obtained, also, the same results by covering the leaves of the plant with black paper. The flowers of cucumber, snapdragon and sage all secreted less sugar in darkness. If, however, the flowers were placed in the dark, and the leaves remained in the light, the amount of sugar in the nectar did not decrease. The secretion of nectar is thus dependent on the food reserves made by the leaves. Darwin observed that the extra-floral nectaries of the common vetch (**Vicia sativa**) ceased to secrete nectar when the sun was hidden by clouds, and the hive-bees left the field, but as soon as the sun broke out again they returned to the feast. (Cross and Self-Fertilization, etc., p. 403).

The force of the sun's rays on the top of Mt. Blanc (15,752 feet) is 28 times greater than at the level of Paris. At an altitude of 8,510 feet the chemical activity of the sun's rays is 11 per cent greater than at sea level. The greater intensity of the light drives the machinery of the plant more rapidly and more food is made. The first stable, or the main product formed is a sugar. If during the daytime more sugar is formed than can be used, it is stored in the cells as starch. During the night the starch is again converted into sugar. There is thus available more material for the production of flowers and nectar than in the plains. That Alpine plants contain a larger amount of sugar is shown by the abundance of red coloration or anthocyanin they produce. As already has been shown, this is formed only in cells which have a cell-sap rich in sugar. Too intense light is injurious, and the role of red coloring may be to absorb a part of the sun's rays. Light is also a direct stimulus to the growth of flowers. In the giant cactus, where the flowers form a ring around the stem, they open first on the side toward the sun. In the shade the colors of many flowers are paler than in the light. The flowers of the chickweed will not open except in light, and some other flowers develop imperfectly in darkness.

### The Effect of Low Temperature

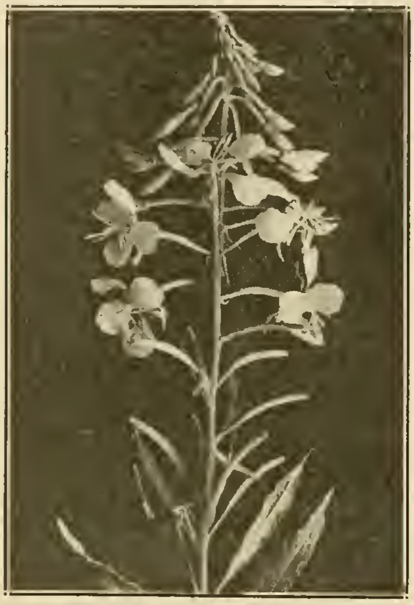
Numerous chemical analyses show that sugar accumulates in plant tissues at low temperatures. When the surrounding temperature is below 50 degrees F., sugar accumulates in potatoes and in various parts of plants. Kenoyer found that the leaves of white clover had 30 per cent more sugar and the flower-stalks 58 per cent more sugar at 50 degrees F. than at 77 degrees F. Ten flowers of alfalfa, after being kept in a temperature of 50 degrees F., for four days, contained a third more reducing sugar than 10 flowers kept in a temperature at 61 degrees F., for the same length of time. In explanation of the accumulation of sugar it has been suggested that starch is converted into sugar more rapidly than it can be used by the plant at a low temperature. If a warmer temperature follows, as when a warm day follows a cool night, nectar secretion is greatly stimulated, since there is a surplus of sugar available, and the warmth renders the membrane of the nectary more permeable.

It is well known to beekeepers that cool nights and warm days are more favorable to nectar secretion than a uniform temperature. According to the 29-year record of honey production at Clarinda, Iowa, the largest amount of honey was stored on days having the widest range of temperature. The early goldenrods, in northern New England, as the early goldenrod (**Solidago juncea**) and the field goldenrod (**S. nemoralis**) which bloom in July, when the nights are warm, yield little nectar; while the late goldenrods, which bloom when the nights are cold, as the tall, hairy goldenrod (**S. rugosa**) and the bushy goldenrod (**S. graminifolia**), are the source of a large surplus of honey.

In the Alps and in all mountainous regions the nights are much colder than the days. As we ascend a mountain the air grows thinner, or less dense, and at a height of 3.5 miles the pressure per square inch is only one-half as much as on the earth's surface (14.7 lbs.). It also contains much less water vapor. Water vapor acts as a great blanket to the earth's surface and vegetation. If the amount of vapor is small, the temperature will fall rapidly. Hence the cold nights at Alpine heights. Dry air is not sensibly warmed by the sunlight passing through it, but if it contains much water vapor its temperature rapidly rises, but the soil receives less heat. In the daytime the earth at high altitudes receives a large amount of sunlight, which the soil absorbs in a much greater degree than does the air. Thus on a clear September day, in the Pyrenees, at a height of 9,400 feet when the air was at 50 degrees F., the soil was at 91 degrees F. The warm soil raises the temperature of the layer of air in contact with it so that the dwarfed plants of Alpine heights find both soil and air very much warmer than at night time. As has been pointed out, this wide range of temperature is favorable to nectar secretion.

### Contrast Between Alpine Vegetation and Flowers

The profusion of Alpine flowers is not accompanied by a luxuriant vegetation, as perhaps might be expected, for the leaves and stems are small, stunted, and poorly developed. The trees are often dwarfed and gnarled, with spreading, twisted branches, forming impenetrable scrubby growths. The shrubs are low and prostrate, the branches of the willows nestling close to the ground. The herbaceous plants do not produce long stems, but great numbers of short tufted stems, or else matted growths. The leaves are also smaller than those of plants growing in the lowlands. The dwarfing of plants at high altitudes is due to various causes, as the severity of the storms and the winters, the cold nights, the low temperature of the soil below the surface, the excessive evaporation of water due to the thinness and dryness of the air and the intense light, and the difficulty of absorbing moisture from the soil.



Blossoms of Fireweed or willow-herb

In general, throughout the plant world, a check in vegetative growth, or of the foliage and stems, favors the production of flowers. The girdling of an apple tree hastens its blooming, and the same result may be obtained by root-pruning. Many cultivated vegetables, growing in a damp, rich soil, do not flower as early as when grown in a dryer soil. A check in vegetative growth renders a larger amount of food available for the production of flowers. The dwarfing of Alpine plants, which is the result of the general conditions at high altitudes, probably, therefore, favors the production of more and larger flowers, and a more ample secretion of nectar.

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## SELECTING A LOCATION

By L. H. Cobb

There are places where conditions are especially favorable to the beekeeper and where honey is a big crop every year. There are plenty of good locations, in these districts, yet to be taken up, but most of us want to keep bees where we are, if we can do so with any assurance of success. The average honey production of the various States with the exception of one or two is about the same. It has been improving in many States, as sweet clover and alfalfa have become generally grown. Even without these there has been a fair production in most places. It is not so much a particular part of the country as the particular spot chosen. One location will be extra good while but a few miles away we may find nearly every year a failure.

A good location is not very hard to find if the conditions needed are considered. White clover, sweet clover and alfalfa are three main sources of supply. Basswood, heartsease, buckwheat, Spanish needle, and some other nectar yielders, may be sufficiently plentiful to help out greatly, and in some localities special plants native of the country, such as the red raspberry of the northern cutover lands and the mesquite of the southwest, will make these places especially good, but the clovers furnish the main honey supply for a large part of our land.

While we have had only one year here, from my experience with similar locations elsewhere I am sure it will prove a good place. We have no great supply of white clover, yet it is scattered well all around. Sweet clover is quite plentiful along the roadways, though I do not know of a field where it is grown for hay or seed. There are several fields of alfalfa of small acreage around us, and timbered creeks each way within a mile. Several home orchards are close, with about two acres of fruit trees on the farm. There is no low land that I know of within three or four miles, so we have no wet soil plants to depend on.

One year I had my bees close to a large swampy field where the grain stubble soon showed green and pink with heartsease, and nearly every year the bees found nectar here to send them into the winter full up with honey and with a force of young bees to winter over. That swampy ground was an asset, and timber is also. The timber starts them off early and the heartsease carries them late, though we cannot depend on heartsease on uplands, as it does not yield nectar in dry years. Buckwheat can be sown freely to help out, but if we get a dependable natural flow, it makes our location better. Be sure you have the standard sources first, and then look out for these special sources. Kansas.

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## THE EDITORS' VIEWPOINTS

**Worker Mated With Drone**

With reference to the note on the above subject in our October issue on page 415, Axel Holst, of the Virgin Islands, calls our attention to the fact that Cheshire (Vol. 1, page 239) mentions a similar case which was scientifically substantiated. While it is probably a rare occurrence this indicates that it is not impossible.

**Beekeeping Damages From Germany to Belgium and France**

We are officially informed, by Belgian authorities, that they are at last securing some bees from Germany, to partly make up for the apiaries devastated in the great war.

Belgium will secure 3,375 colonies in straw skeps, and France 20,000. They are to weigh between 15 and 17 kilos (33 to 37 pounds). We understand that the agreed value of these is to be credited against the amount of damages to be paid. Right! If they could make Turkey pay the Armenians in the same way!

**Fertilization in the Honeybee**

We acknowledge receipt of a copy of No. 2, Volume 31, of the Journal of Experimental Zoology, containing a very exhaustive and scientific article upon the above subject. Geo. H. Bishop, of the Zoological Laboratories of the University of Wisconsin, gives a wonderful description of the reproductive organs of the queen and drone, with anatomical cuts and plates.

It is out of the question for us to do the subject full justice; we are not sufficiently versed in microscopic investigations to go deeply into this matter; neither would the average reader be interested in the details. But there are a few points in this study which we ought to mention.

The study quotes 8 different authorities on queen fertilization, none farther back than 1882 (S. A. Shuck, in American Bee Journal, 1882, page 789). Huber made numerous experiments, from 1787 to 1812, upon the mating of queens. He also quoted at length some very interesting experiments and engravings from Reaumur (Quarto edition, 1740). As a matter of course, neither of these observers had the modern facilities for microscopic studies, and especially for magnified descriptions, yet it is remarkable how closely they came to the modern studies.

Huber's "Nouvelles Observations," the last edition of which was published in Geneva in 1814, were translated into English but, strange to say, some of the most interesting descriptions of the study of fertilization were entirely omitted in the English translation. Huber's second letter to Bonnet, mentioning a number of facts on this question, and which contains 36 pages in the French edition, had but 3 pages in the English edition of 1821.

The present description of the organs, in fertilization, mentions a point in which Huber did not agree with his renowned predecessor, Reaumur. Mr. Bishop tells us that, in mating, the penis of the drone and its "bulb" are everted (turned inside out) from the drone's body into the vagina of the female; that "the penis is gradually forced out from within, as one might force out a glove finger that had been turned inside out in stripping it off, by blowing into the wrist of the glove."

Huber, on this same subject, quotes Reamur as follows: "When we press the belly of a drone gradually, with care, we cause other parts also to be ejected; these parts show themselves on the opposite side from their position in the body. The surface of these parts, which was the inside, becomes the outside; the same thing happens to them as to a stocking which is drawn inside out. If the opening of the stocking which we turn inside out was fixed upon a hoop, and if we began to evert it by beginning at the part nearest the opening, so that the heel and toe came last, we would have, in this eversion of the stocking, an exact illustration of the manner in which the organs of the male bee are turned to project outside."

Huber held that this eversion of the organs of the male does not take place to so great an extent, if at all, when his organs are exuded in natural circumstances, as when forced out by pressure. He wrote:

"When we examined the lentil" (called by our modern observers the bulb of the penis) "of which the queen had rid herself, we saw clearly that it had not been everted, since the side of it which we saw was the same as what is seen within the body of a male; we recognized this by the position of the 4 scaly plates" (that cover the lentil or bulb) "which exhibited their convexity and which covered the lentil and its posterior end; had they been everted, the contrary would have been the case."

Thus Huber held that the organs of the drone do not extrude in the same manner, when they are naturally thrust out in copulation, as when they are forced out artificially in the manner well-known to all beekeepers who have ever handled drones.

We see by several statements of Mr. Bishop, that he is himself in doubt as to the complete eversion of the male organs, as described by Reaumur. He also quotes Zander as stating that the eversion of the male organs "extends to the median bulb," which is that part of the male organ that Huber calls the "lentil."

So we realize, once more, how careful Huber's observations were. He made hundreds of experiments upon the fertilization of queens, and his descriptions are not based upon isolated facts, but upon a succession of experiments in which he accepted only those that reproduced themselves several times over. It is to be regretted that his works were never published entirely, in English. Our editor, at the request of a number of interested beekeepers, has undertaken a literal translation of them and hopes to be able to publish them in a year or so.

One important and very practical fact which Mr. Bishop has elucidated is the age at which drones are fit for mating. It appears that they are not fully mature until they are at least 5 days old, and are still better at the age of 9 days.

Our sincere compliments are extended to Mr. Bishop for this contribution to scientific knowledge on the mating of bees.

**Do Bees Hear?**

Mr. Tichenor's article in this number on the above subject is exactly in line with the arguments furnished by Cheshire, author of "Bees & Beekeeping." He wrote:

"Should some alien being watch humanity during a thunder storm, he might decide that thunder was to us inaudible. Clap might follow clap without securing any external sign of recognition; yet let a little child with tiny voice but shriek for help, and all would at once be awakened to activity. So with the bee: sounds appealing to its instincts meet with immediate response, while others evoke no wasted emotion."

Our scientists have been unable to positively ascertain the location of any ears in the bee. But we know that their different sounds are recognized promptly by them. Huber wrote some very interesting statements on this subject and we expect to give them to our readers in the course of a few months.

### American Honey Producers' League

The League will meet at Salt Lake City, January 30 and 31, 1922. It is of great importance that each state or district association be represented at this meeting, if we expect to have combined action in the sale of our products and wish to be heard on matters of interest to all beekeepers, such as railroad rates, laws, etc. Don't forget this meeting. For additional information write H. B. Parks, Secretary, of San Antonio, Texas.

### Georgia to License Queen Breeders

The State of Georgia has adopted a rather novel method of supervising the business of queen rearing and package bees. An amendment to the Georgia bee disease law was adopted at the last session of the Legislature which goes into effect the 1st of January, 1922, providing for a license to be issued to all persons engaged in such an enterprise. Application must be made to the State Board of Entomology with a fee of $25. The Board, after investigating the applicant, may issue a license, if he is found worthy. The license may be revoked at any time if the applicant fails to comply with the law or the rules established by the Board.

This looks like a step in the right direction. There has been much complaint of irresponsible breeders, and a careful supervision seems to be the only way to safeguard the interests of the public. If the Board sets a high standard it will be to the interest of every breeder as well as to the interest of their customers. In most of the States similar supervision is established for nurserymen to insure that no trees or vines will be sent out which carry insect pests or plant diseases. Some will regard the fee as too high.

We hope that the regulations of the Georgia Board of Entomology will not only insure that every breeder must maintain his yards free from disease, but that pure matings must also be insured as far as such a thing is possible, and that business-like methods of attending to correspondence and filling orders be followed. This will, of course, make queens a trifle more expensive.

### Drugs for Treating Foulbrood

We would call the attention of our readers to the article on the Lewis treatment of European Foulbrood, by W. J. Sheppard, in our November issue, and to the comments which Arthur C. Miller adds in this issue. Let us add that this method of treatment is still in the experimental stage and while these reports look promising, it is too soon for the average beekeeper to risk any extended dependence upon drugs. General Laboratories, the manufacturers of B. K., advise us that their experiments have not as yet gone far enough to warrant them in asserting that the colonies can be rid of disease without disastrous results to the bees. They state that some special form of the hypochlorite may, and probably will be, necessary to make it safe to recommend for general use for this purpose.

We are further advised that most sodium hpyochlorites differ widely in their characteristics and effects and that different forms might give very different results. This being the case it would be difficult, if not impossible, for the beekeeper to make a solution twice alike. Again it should be used with great care, since some forms have characteristics which are likely to cause injurious effects.

While we are hopeful that good results will follow the experiments now under way, beekeepers should be advised to act cautiously and not undertake any treatment in a wholesale way without first making sure that the chemicals are properly prepared. It is only necessary to state that should this treatment prove entirely successful, the proper material will soon be available to the beekeepers in a convenient form. In the meantime we will watch with interest the progress of further experiments.

### That Prize Contest

Letters regarding the prize contest announced in our November number began coming in at once. What we want is to know what particular feature of the last year's Journal was most interesting and valuable to you. We are not asking for articles for publication, but your frank opinion. We want to make a better publication, so let us know what kind of material you like best. Read the announcement on page 437 of the November number and write us. You may win the $10. Address Contest Editor.

### Bees Transporting Eggs

Mr. A. H. Pering, Secretary of the Monroe County, Indiana, Beekeepers' Association, reports two cases of queens accidentally confined several days in cages, in colonies that were otherwise hopelessly queenless, the queens dropping the eggs in empty cells and caring for them, so that they hatched.

Have any other beekeepers noticed such performances? In every case where eggs were found in cells, in queenless hives, in our experience, these were laid by drone-laying workers and hatched into drones. We do not believe that either Huber or Langstroth ever witnessed anything of this kind.

What is the sex of eggs dropped aimlessly by a queen? This question has never yet been elucidated.

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We read in the British Bee Journal of October 20:

"Fellow readers will remember the report, giving us the information re that veteran apiarist, Mr. T. W. Cowan, being present at a very important gathering, I believe the first time he had spent the day away from his wife on the anniversary of their wedding, and that was drawn to the notice of the gathering; it was the golden wedding anniversary, though nobody seems to have referred to it in the numerous and interesting contributions; doubtless all are with me in wishing Mr. and Mrs. Cowan many more happy returns of the day."

Here, too; the editor and the readers of the American Bee Journal join in wishing Mr. and Mrs. Cowan "many happy returns of the day."

### To the Various Beekeepers' Associations

You are all aware of the subscription organized to establish a memorial of Dr. C. C. Miller, in view of the numerous services he rendered to beekeepers, without ever enriching himself.

The committee in charge is composed of Messrs. E. R. Root, Dr. E. F. Phillips, B. F. Kindig, E. G. LeStourgeon and C. P. Dadant. At the suggestion of Dr. Phillips, it was decided to establish a memorial bee library and place it in one of the Colleges of Agriculture, probably the one that would offer the best inducements for it.

Several bee associations have subscribed liberally to this fund. The committee now suggest that each Secretary or President of an association present the matter at your next meeting and help make this memorial worthy of the great man whom it will represent in future years. Even foreign beekeepers have appreciated the services of Dr. Miller and have sent their help. But we should get together a worth-while sum, and trust each of you may take pride in helping this along.

Associations already having subscribed through the American Bee Journal are, Montgomery County, Pa., Wisconsin, Connecticut, Massachusetts and Texas.

All subscriptions will later be published in the American Bee Journal.

### Southern Italy Beekeepers' Convention

"Allevamenti," a stock breeders' journal, of Palermo, Sicily, in its October 1st number, reports the meeting of the First Meridional Congress of Beekeepers, in Palermo, September 22, 1921. In this Congress, great stress was placed upon the importance of the industry of beekeeping in the United States, and the necessity for Southern Italy to increase the cultivation of bees in its meridional parts. The same magazine contains a very interesting description of an experimental station for beekeeping in Bavaria, managed by Dr. Zander, with cuts of apiaries of different sorts.

### Latham Gets Publicity

Allen Latham, President of the Connecticut Beekeepers' Association, is getting some free advertising. At some eastern meeting he got off some kind of a joke about bees and prohibition. A wide-awake reporter saw material for a good story, and now Latham's name may be seen in most any paper which you pick up, from Arkansas to Maine. The story quotes Latham as saying that prohibition has reformed the bees that formerly hung around the breweries and got drunk on the mash. There are several different turns to the story, as it appears in different localities, but it is all based on the bees getting drunk at the back door of the brewery.

# SELLING THE HONEY CROP

## Pointers from Fifty Years of Personal Experience in Selling Large Crops.—By C. P. Dadant

I HAVE read somewhere, lately, the statement of a honey dealer, "that the selling cost of honey will run at least 100 per cent over that of production." Probably it does, and that is an argument in favor of the beekeeper selling his honey himself, for in many cases he is not very busy at the proper time for honey sales. But not all beekeepers do it.

Perhaps, in order to show how one may succeed in selling one's crop, I had best give an account of my early experiences, which resulted in our success in honey sales.

In the previous number of this journal, I narrated my disgust and disappointment at the slight given to my fine extracted clover honey, water white, by the first man to whom I offered it. This, however, did not permanently discourage me. I am rather of a tenacious disposition, and faulty opposition makes me more obstinate. A man is very strong, when he knows that the goods which he offers are as represented. However, for 3 or 4 years, we sent a part of our crop to commission men in Chicago and St. Louis. Our experience with Chicago was at the time of the Chicago fire, 1871. Luckily, the commission man to whom we had sent our clover honey had sold it and made returns before the fire. We brought the fall honey to the railroad station, to be sent to him, on the day of the fire, and the railroad company refused it. This saved us a loss, as the man went into bankruptcy.

In 1873-4-5, we made exhibits at the Iowa State Fair, which took place at Keokuk, 4 miles from us. This brought so many sales that we became convinced that honey could be disposed of locally, if only we became known as honey producers. We took first premiums. I doubt that beekeepers in general realize the great profit which their business may secure from such advertising as can be had at State Fairs. It is true that it costs money, but if you accept the statement contained in the first paragraph of this article, the expenditure of $50 or $100, for an exhibition, is but a small matter, if you have 5,000 to 10,000 pounds of honey to dispose of. Only a cent or two per pound is a trifle when you consider the increase in price that you may secure. Besides, the results of such advertising last a number of years, even if you have exhibited at only one or two fairs. Local fairs, county fairs, are good in the same proportion, and the expense is less.

What is worth doing at all is worth doing well. If you exhibit honey, it must be fine, in looks as well as in taste. My best winning exhibit was that of 3 Quinby-Dadant full-sized frames of white honey, staged in a home-made show case, one behind the other, so that the first comb concealed the bottom bar of the next, and the second concealed that of the third, making tiers covering about 30 inches in height. People stopped and asked questions; that was the only requirement to help sales.

I believe we were the first to put up honey in 10-pound tins. Those holding a gallon were too large; so we had our tinner make such as are now used, except that we did not then have the improvement of the "friction-top" and the lid fitted over the top of the pail. We aimed to sell all the honey in granulated form or to warn the customer of the likelihood of its granulation.

My first real active sales of extracted honey were in that shape. One small grocer took 120 ten-pound tins in one winter. But he had visited our apiaries while we were producing the honey and had seen us extracting, and he **positively knew** that Dadant's honey was all right and did not hesitate in guaranteeing it. That is a great point.

Then came the demand for smaller packages, to my great sorrow, for the smaller the packages are, the more sales you have to make for a stated amount of honey. But when I called upon the grocers, I was glad to be able to supply packages as small as a single pound. It is an unfortunate thing that the consumer who can least afford it, buys his supplies in the most reduced shapes. The day laborer, who gets his pay envelope at the end of the week, is not wealthy enough, or does not think he is wealthy enough, to buy a whole hundred-pound sack of sugar, or a 60-pound tin of honey at one time. Yet he is the one who needs to buy in large lots, so as to get his food supplies at the bottom figure. But it is useless for us to deplore this, since we cannot help it. We must supply things as demanded.

Nothing did me more good, on honey sales, than a friendly lecture from a drummer of wholesale groceries. He explained to me, at length, the necessity of convincing the retailer, by all possible means, of

Monument on a public square in Florence, Italy, showing swarm of bees on a pedestal of the statue of Ferdinand De Medici. (Courtesy of Sig. Ugo Lori).

the quality and genuineness of my product. He taught me that grocers and buyers in general must be properly interviewed, when they are not too busy to listen, and when they are in good humor. He also explained that many people fail to sell goods because they at once take "no" for an answer, that nine-tenths of the customers are apt to change their minds when properly and pleasantly interviewed. A very fine customer of mine, at St. Louis, one of the best retail grocers there, proved this statement and regularly gave me an object lesson, unconsciously; for after having heard and appreciated the advice of my drummer friend, I resolved to follow it and "hang on." Well, this grocer would invariably discourage me when first interviewed; he did not want any more honey, he had too much trouble selling it; it would occasionally leak on his counters; his clerks did not know how to recommend it; he had a thousand objections. Sometimes I would leave him for a few hours and come back and try again. It was all in pleasant conversation, as if honey were only an incident of the visit. Slowly his arguments would lessen and he would usually end by giving me an order for a ton or more, in all sizes of packages. This would happen in the same way, more or less, every year, and it usually took a whole day, but I made the sale; it was worth while. He was always sure that he secured the lowest price that I would be willing to make.

Most grocers are good men to deal with. But we must convince them that our goods are pure, that they are cleanly put up, that they may guarantee them to their customers, and that we will gladly take back any goods which have the least defect. I remember taking back one tin of honey, because a fastidious lady had found a bee's wing in it.

When this matter is thoroughly understood, there is but little difficulty in selling honey. Honey! Who says there is anything better than honey? All we need, to secure sales, is to convince the people of its purity, and this can be done if we only try.

We always exchange any shop-worn goods for fresh ones, with the customer who sells our honey. A soiled label makes the package unsaleable. Put yourself in the retailer's place and treat him right.

Advertising.—This does not always cost large sums of money. One of our leading educators whom you all know, told me of his own father selling thousands of pounds of honey, right at his home, because his apiary is along one of the most traveled highways in the United States, and he has a little sign, close by the apiary, of "HONEY FOR SALE." He has to buy several tons of honey to supplement his own crop. The hives of bees do the advertising for him and the traveling public, of course, takes it for granted that those bees produce honey. If we could take a hundred colonies of bees with us when we sell honey, we would sell ten times more.

Our largest local sales began after a meeting of the Warsaw Horticultural Society, at our home, in 1884. This Society was next to the State Horticultural Association, in importance, though only a "local." They met successively at the homes of their members, for practical demonstrations and lectures. For the meeting in question, they had secured the services of a leading horticultural lecturer, Mr. Periam, then editor of the Prairie Farmer. We had not given a thought to the possibility of this meeting being good advertising for us, although we had agreed to do some honey extracting before the members and give an apiary demonstration. Fortunately for us, a live business man of Keokuk, a city of 14,000, urged the merchants of the city to attend this meeting, saying that they would be well repaid for their time. We had a throng, not only of Illinois horticulturists, but of merchants in all sorts of products, some 500 people; and our apiary and our extracting were the town talk for several days. Most of these people saw something entirely new to them, and spread the information voluntarily and cheerfully. It was a great success, and we had not foreseen the results in increased sales.

I am telling this, simply to show what good may be done by judicious advertising, sometimes with little expense. If you have the honey, if you put it up in attractive shape, very clean, of proper sizes for the demand, and if you hustle a little, you can sell tons and tons of it, at profitable prices. It is true that not all can do it, because not all are located where it is possible to reach the customer. Beekeepers in the localities where every acre is a honey producer, where cities are scarce, must use other means of advertising. I will speak of this a little farther.

We need a good label, but to me a good label is not necessarily an expensive one. It must exhibit the word "HONEY" in large letters. My reasoning is that people do not go to the grocery to buy honey as they go to buy butter, potatoes, sugar, flour, eggs, etc. This is because honey has never been plentiful enough to be always on the grocer's shelves. But America consumes fully 40 pounds of sugar for every pound of honey, and everybody knows that honey is the best of sweets. They need to be reminded of the existence of honey. How many people buy honey regularly? One in a hundred? Hardly. That is why a showy "honey" label does better work than an ornamental one in which that word does not show at sight. No need of putting a lot of printing on it. They don't read it. But we can enlighten them by handing to them some printed explanations, profusely illustrated, so they may become interested. This has proven a good thing on both sides of the Atlantic. Although granulated honey has a better standing in Europe than it has here, it is necessary, there as here, to explain that not all honey is alike, that the man who has eaten buckwheat honey must not think that clover honey is adulterated, or that basswood honey is made with some sort of lemonade, as suggested to me once. Until one goes about, selling honey, one does not realize the profound ignorance of the masses on the subject. If granulated honey is less appreciated here than in Europe, it is due to our own producers who, many of them, seem to be ashamed of their honey when it granulates. Yet no other product than pure honey possesses exactly this peculiarity, so it is an evidence of purity.

The beekeepers in the favored regions of large honey production, but who are at a disadvantage when they wish to sell it, need to use printer's ink, away from home, and organize in associations, to sell through a center, as they do indeed. But all beekeepers who have honey for sale, in any quantity, need the co-operation of others, not only in their locality, but in their State and in a country-wide organization, a National League, so they may learn the conditions of the crop, the prospect of the markets, the probable prices, etc. The lack of co-operation, in the old days, was the greatest drawback. Although we tried to get a general understanding with our neighbor beekeepers, some of them would inquire indirectly about our prices, in order to undersell us, claiming that they could not make sales unless they did so. It is a great mistake, for it forces prices downwards.

## ITALY FEATURES THE BEE

We are indebted to Dr. Alberico Molinari for a small Italian coin with a honeybee sucking at a flower, shown on one side. The picture shown herewith reproduces the coin at very nearly exact size. The value is equal to about two cents in our money. We would like very much to know whether any other country has ever featured the honeybee on any coin, paper money, postage stamp or official documents. Information on this point will be appreciated.

Face of Italian coin showing honeybee

## DO BEES HEAR?

### By J. H. Tichenor

The question, "Do Bees Hear?" page 399, is interesting. I have long ago concluded that they do hear, but admit that there is no positive proof. Let us make some comparisons among the animals and birds; do cows hear? Let me go out and call my cow, and if in hearing distance, she comes. Let any other member of the family call, and she will not move a hoof. Hence, the cow not only hears, but can distinguish voices. Do hens hear? They come from all quarters at my call.

When a bee comes at you to sting, you understand her, don't you? She says plainly, "I mean to sting you." Still you don't run. She perhaps returns to the hive for reinforcements and gets them quickly. I imagine that she reports about like this: "Say, fellows, there is a man out there, stone deaf, and sting-proof; got to have help."

You are all familiar with the heavy hum of the drone. You also recognize the merry hum of the worker, in fair weather and good honey flow; also their wailing, moaning sound when in distress. Now is it reasonable to suppose that bees are given all these means of expression (which we call noises because of our inability to understand their language), and not be able to hear? I have lived among the bees too long not to have seen them do things which require thought on their part, and communicate them to their fellow-beings, apparently before the things could be accomplished.

It is all right to discuss this question among ourselves; but I am going to keep this matter from my bees, lest they may think that we are presuming too largely upon their ignorance.

Wisconsin.

## GLIMPSES OF WISCONSIN BEEKEEPING

### Notes and Pictures Showing What Beekeepers Are Doing in the Badger State

By H. B. McMurry

The pictures on this and the following page will give an idea of beekeeping conditions in Wisconsin. These brief notes are designed to explain the pictures.

Fig. 1.—Yard of Ivan Whiting, Plymouth, Wis.

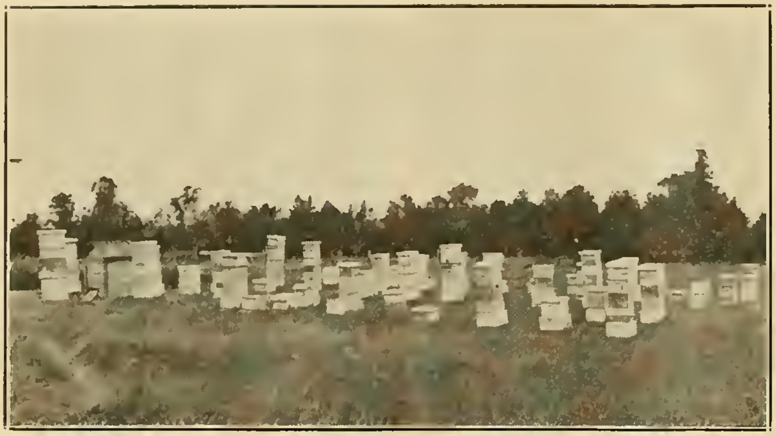

Fig. 1.—Ivan Whiting's apiary

Mr. Whiting came to us from Illinois, and has established himself as one of the most progressive beekeepers in his section. He secures uniformly large crops, principally from white alsike and sweet clover and basswood. Aside from being instructor in the high school, he finds time to assist very materially in the organization work among beekeepers of his county, and this year spent considerable time as a deputy inspector. If Illinois has any more beekeepers of the Whiting "brand" she will please send them along.

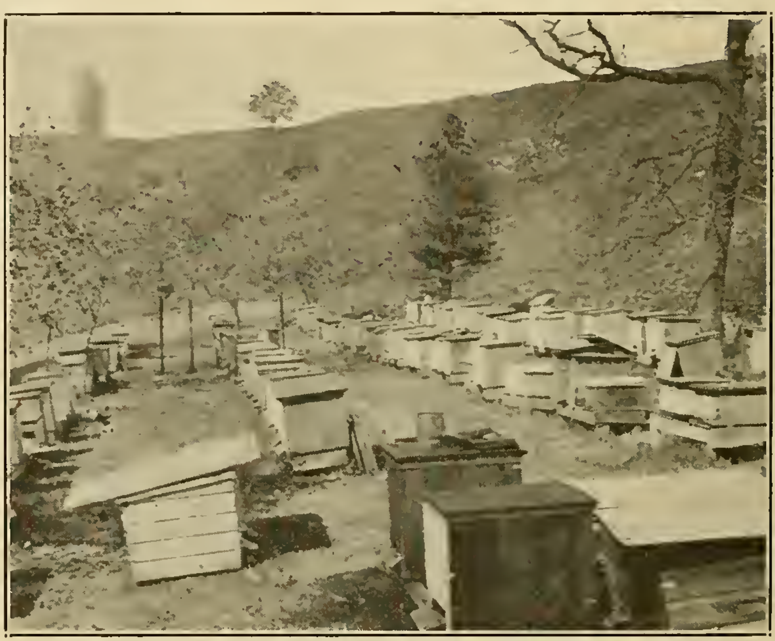

Fig. 2.—Sheboygan County apiary of L. T. Bishop

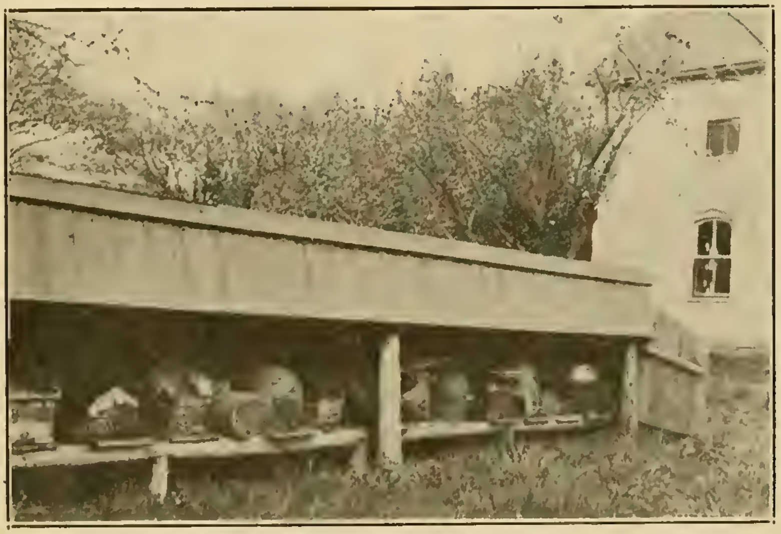

Fig. 3.—Mr. Kreiger keeps bees in the old way, straw skeps

Fig. 2.—The yard of L. T. Bishop, Sheboygan County.

The picture was made last spring. The packing cases are still on. Mr. Bishop is one of a group of beekeepers whom I designate as "paper packers." They use what is known as the Schmidt packing case, which allows for no packing underneath, except a few sheets of tar paper, only 3 inches around the hive with 6 or 8 inches on top. They leave the covers sealed on. The hive is wrapped in paper, usually 6 to 10 ply, and the packing material is loose planer shavings. This method seems to be very sucessful in the hands of beekeepers

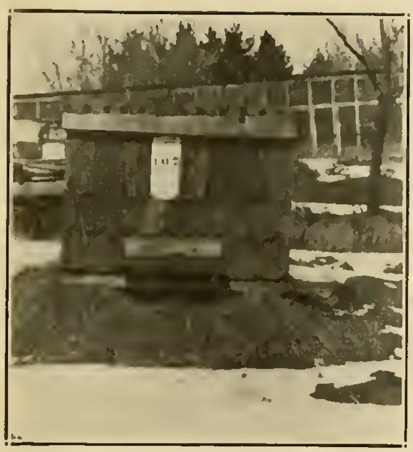

Fig. 4.—The Eskil packing case

like Mr. Bishop, as it was with Mr. Schmidt, who worked out the system many years ago. These fellows laugh at the arguments put up by the "upward ventilators."

Fig. 3.—Mr. Kreiger's yard at Rio, Kewaunee County.

Mr. Kreiger keeps bees very successfully "the good old-fashioned way." As shown in the picture, he uses the straw skep. He claims that the bees winter better in these than in modern hives, and he proves it by his experience. During the winter the bees are stored in a small house, the walls of which contain about 6 inches of packing. Mr. Kreiger had a number of prime swarms in May. It is indeed interesting to find a beekeeper who is making some success in keeping bees as they were kept hundreds of years ago.

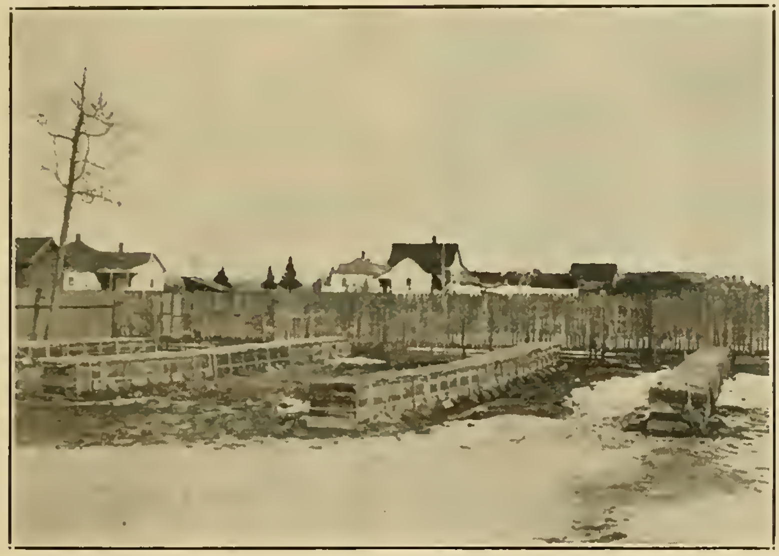

Fig. 6.—D. A. Blanchard's yard in Langlade County

Fig. 4.—The Eskils, of Iron Mountain, Michigan, wintering successfully out of doors.

The above packing case has been the abode of a thriving colony for the last eight winters. These people are among a large group who advocate "upward ventilation." They remove all covers, place several thicknesses of cloth, such as sacks, carpets and old coats, directly over the colony and then cover with a pack of sawdust or leaves. They came very near convincing me that bees could not winter in northern Wisconsin with the covers sealed on. Shortly after my visit to the yard, I had an occasion to see some of the bees in my Shawano County yard, and having found them very contented and dry in spite of the sealed covers, I decided to investigate further.

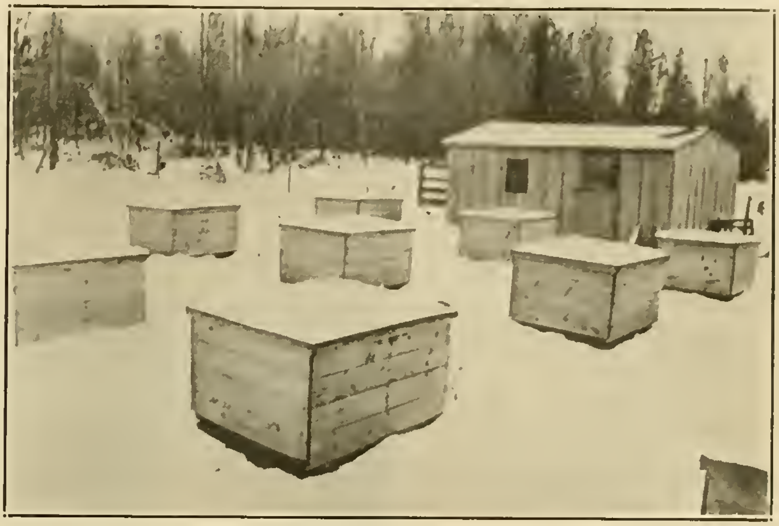

Fig. 5.—Forest County yard in winter cases

Fig. 5.—A corner of the yard of Julius Gentz, Wabeno, Forest County, Wis.

Mr. Gentz has made beekeeping his chief occupation for many years. He had 260 colonies this season. He winters some of them in cellars. For many years he has wintered 60 colonies in packing cases as shown above. He uses quadruple cases with no packing underneath the hives, except tar paper and only 3 or 4 inches of leaves around the hives and 6 or 8 inches on top. Mr. Gentz is a member of the group of "upward ventilators." He is in a section which produces very fine crops of honey from wild raspberries and fireweed, as well as occasional crops from clover and basswood. He claims that experience demonstrates that bees wintered out of doors build up faster in the spring. This, no doubt, is accounted for by the protection which the packed colonies have during the spring.

Fig. 6.—D. A. Blanchard's yard at Antigo, Langlade County, Wis.

Here the colonies are placed side by side, each alternate pair facing opposite directions. The covers are left sealed on. The packing is planer shavings and 6 inches underneath, on the ends and top, all enclosed in roofing paper. An examination in March revealed that these bees had wintered in very fine condition. There was no moisture present, nor any other indications of poor winter conditions.

Fig. 7.—At Laona, Forest County, Wis., I found Mr. G. J. Guenther wintering bees very successfully in a large, well-lighted cellar, one part of which was used for a work shop. The picture shows a large box in which 8 colonies are wintering. They are kept

Fig. 7.—Bees in box in well lighted cellar

in the dark by the cloth cover on the box, which also serves to help keep them warm when the cellar is too cold. He has practiced this method for a good many winters and finds it very successful.

## THAT NATIONAL TRADE-MARK

Several months ago it was proposed that a trade-mark be established for the American Honey Producers' League. I agreed to design such a trade-mark, provided the beekeepers of the country would give their support in suggesting what this trade-mark should consist of.

The matter was given considerable discussion in the editorial columns of the bee journals, but our busy beekeepers probably did not heed the matter or give it serious thought. only two or three suggestions were offered during these past months.

While I have my own ideas in the matter, yet the question of a trade-mark affecting the honey industry of the nation, cannot be decided or suggested by one person.

Many trade-marks now existing, used in connection with honey, have embodied in them one or more honey plants. I feel that honey plants should be omitted entirely from the trade-mark. It is entirely impossible to name a honey plant that is a major source of surplus honey in every State in the Union.

To design a suitable trade-mark that will be adaptable to the entire country, is quite a task. Will you please offer your suggestions?

C. W. Aeppler.
Oconomowoc, Wis.

It is vitally important that the American Honey Producers' League adopt a trade-mark for future advertising campaigns. Now is your opportunity to suggest ways, designs and wording for your trade-mark. Take advantage of the opportunity and send your suggestions to Mr. C. W. Aeppler, who is a practical beekeeper and artist.

This League is your League; use it and benefit by it.

C. F. Muth,
Chairman Advertising Committee, American Honey Producers' League.

## FROM THE FAR WEST

The west is not so wild any more, but there is still plenty of room out there. An extension man has to travel long distances and visit widely separated localities. Beekeeping is quite generally concentrated in favorable situations in the valleys while there are large areas which at present would not support honey production on a profitable basis. H. A. Scullen was one of the first beekeeping specialists employed by an agricultural college on the Pacific Coast. Although he had formerly lived in Oregon, he was a member of the faculty of the Iowa College of Agriculture when selected for the position of beekeeping specialist for the Washington State College at Pullman. After several years of successful work in Washington he resigned to accept a similar position at the Oregon College, where he is still stationed. Scullen is well known to the beekeepers of the west and we take this opportunity to introduce him to our readers of other sections.

## SELLING HONEY

By M. P. Woodworth

I am not boasting that my method of selling direct to the consumer is altogether new. The main thing about it is that it works out for the products of my own apiary. Up to the present time I have sold 3,000 pounds of fine clover honey, locally. The honey is put up in five and ten-pound pails, one pound, one-and-one-half and three-pound jars, and attractively labeled. Every writer on the marketing of honey emphasizes the sale value of an honest label, and especially a label suggestive of the delicious sweet within its container. There must not be too much reading matter, as folks do not read all, especially the instructions regarding the care of honey after it granulates. One must talk a great deal, when conditions are ripe for talking. Bees and honey spell mystery to the average individual. Let the beekeeper expound the manifold mysteries of the hive and its occupants. A great deal of misunderstanding arises through lack of knowledge as to how honey is actually produced. Many a buyer is skeptical, he thinks there is something artificial about our honey. The fact that we have pure food laws and bee inspection does not dissipate his doubt. To sell honey one must establish faith in the purity of it.

H A. Scullen

Only yesterday a physician inquired of me about comb honey. He said he would like a few combs, as he knew it was the real article.

To overcome such a state of mind I explain how honey is actually produced, and I always carry photographs of my apiary and small exhibits of extracting combs, fat with honey. It's a real pleasure to see the feeling of confidence that comes as a result of the pictures.

There is nothing I like better than to sell this finest of sweets. In fact, I am in love with honey. I have jars, pails and combs of it in conspicuous places about my home, where my eye can see and my mind contemplate its beauty. The presence of honey about the house serves another purpose—it keeps me enthusiastic over the work. Our frequent callers cannot resist buying, when they see such a tempting article.

As I live a short ways in the country, on an important highway, my large "Honey for Sale" sign across the driveway halts many an autoist. I also conduct a roadside stand, where I display my apiary products in the various containers. I spend a portion of each day in the city, with my Ford touring car, at an important street intersection where the traffic is thickest. I manage to stay between 11 a. m. and 2 p. m. Honey is in evidence on every available space in the car. I have two large honey signs, one on the back curtain and one across the lower portion of the wind shield. The upper portion of the wind shield is bent down at right angles to make a shelf, and across this shelf I place my jars. The rear seat is stocked full of pails and jars of honey; pails are hung about on the outside. So the passing public knows there is honey for sale, and because it is attractive they want it. At times I go into various offices with one-pound jars, and I am surprised how well the honey sells. The small jars serve as samples, and orders come in later for larger quantities.

I believe it would be wise to carry an observation hive somewhere on the car to attract attention and thereby stimulate buying. Extracting combs enclosed in glass to keep out dust would be an added feature. Someone might suggest why not move the whole apiary down? No, not quite that.

My honey is bringing a better price, I think, than most of the beekeepers here are getting. Fifteen to twenty cents are the prices for extracted honey. I am realizing from 22 to 25 cents for most of my honey. The buying public is willing to pay a little more for looks than some beekeepers realize.

Wisconsin.

## CARNIOLAN BEES

I have your letter asking for my opinion on the Carniolan bees. The Carniolan bees have been tried and condemned again and again by a hasty jury. Their nature and efficiency have never been made a subject of thorough research, therefore, I hesitate to reopen the case.

I believe there are varieties and races in bees just as in chickens, cattle, or pigs, each race fitted for a different purpose, different climate, and different conditions, and to say that there should be just one race of bees for all the United States and that one is the most perfect everywhere under all conditions, is going against all experience in every branch of animal industry.

I took up the study of Carniolan bees two years ago. I imported my stock and bred from it and raised honey with it in a special apiary. I am just beginning to find out their characteristics and it may be several years before I will be ready to make any definite statements concerning them. It is impossible to enter into details at present. I mention only a few points, which apparently are coming to the front:

1. They are larger than other bees, and have longer tongues and can work on red clover.
2. They gather proportionately more honey per colony than other races.
3. They are the gentlest of all bees we have in the United States; absolutely quiet on the comb, not flying from the comb when handled, and we need no smoke when working with them.
4. They are hardier than black or yellow bees and can stand at least two degrees more cold.
5. On account of their quiet disposition they winter very well.
6. They hardly ever rob.
7. Their queens are so prolific that they are superseded in the early summer.
8. They cannot be kept in a ten-frame Langstroth and nothing less than Dadant size of hive will do.
9. Their management will differ radically from the management of Italian bees.

These are the lines along which I am working now, and I will be too glad to send you further information when, after longer and closer investigations I arrive at definite conclusions and can furnish proofs for the same.

Francis Jager,
Minnesota.

## DECOY HIVES

By Dr. Ransom A. Race

Early in the spring I prepared some boxes with an old brood comb and placed them in trees in the woods. One of these was placed about a mile from my apiary on the 18th of May. The following Sunday a friend and myself strolled over to see if there was any signs of a bee about the box. The first glance showed six or eight bees flying about and my companion said, in a disgusted tone: "Blamed few bees around here." After watching them for a few minutes I became convinced they were "scouts" from some swarm then clustering somewhere in the woods. Filling our pipes we sat down under a nearby tree to wait developments. In a very short time every bee flying about the box left it; but in less than three minutes a slight buzzing sound was heard which kept increasing in volume and in almost no time the bees were seen coming down through the trees straight for the box, no time being wasted by them in taking possession.

As soon as nearly all were in, the box was closed and taken home and they were hived in a Modified Dadant hive, which they have filled with comb and about 25 pounds of surplus honey, and that, too, during a season that has been almost an absolute failure.

They are splendid Italian bees, as well marked as any bees I have in my apiary.

While this was taking place it was almost as interesting to watch the friend who was with me. Until then he had no interest in the bees, but, since then, his interest has grown until now he has bees of his own, and I really believe he has become as big a "bug" as I am.

Massachusetts.

## HONEY PRODUCTION COSTS IN A SMALL APIARY

By Elmer Beach

Having just finished figuring cost on my honey production for this year, I thought you might be interested in seeing the figures.

My little apiary is composed of eight colonies, five in old-style Dadant hives, two in 10-frame Langstroth and one in 8-frame, all located here in my home garden within ten feet of each other.

The nature of stock investment, being of wood, and necessarily kept well covered and protected, and when that wood is covered thick with wax it is still less destructible, I finally decided that 5 per cent depreciation, same as on wood buildings, would be about right, instead of the 10 per cent allowed on most classes of equipment. While these stacks may be termed equipment, the charge is always based on the "probable life of the asset in use," and I presume unless something unusual happens that most of the stack equipment will be in use at the end of 20 years. Therefore in this cost work I depreciate the stack at that rate, 5 per cent, instead of 10 per cent.

Some may not agree with me in capitalizing the work of the bees in combs. But I insist on that. If my bees spend their time this season creating 100 new combs, this season should have the credit. Because they are going to remain right on in use for twenty years more. They will never need building again, and by capitalizing them and then spreading the amount over 20 years as a depreciation charge on stack investment, that makes each year stand its own part of that investment. I may be a little high, but I would hate to undertake making one for 50 cents. I feel that my charge is about right, when compared with the cost of aluminum combs.

### My Central Plant Investment

| | |
|---|---|
| Small honey house, valued at | $100.00 |
| Extractor and small tools | 56.40 |
| Total investment | $156.40 |
| I figure depreciation as allowed by the Government. | |
| 5 per cent on building | 5.00 |
| 10 per cent on other equipment | 5.64 |
| Annual depreciation charge | $10.64 |
| This plant has been in use for 4 years, total depreciation for time in use | 42.56 |
| Sound value of central plant investment | $113.84 |
| On which I have figured interest at 6 per cent. | |

### My Stack Investments

| | |
|---|---|
| 8 hives complete | $ 80.75 |
| 4 extra bodies, complete | 22.05 |
| 20 supers, complete | 79.90 |
| I have also capitalized the bees and their work in building combs as follows: | |
| 8 colonies of bees at $5 | 40.00 |
| 110 brood combs at 50c each for Dadant and 40c each for Langstroth | 52.00 |
| 210 extracting combs at 20 and 25c | 46.50 |
| Total stack investment | $321.20 |
| While the Government allows 10 per cent depreciation on almost every kind of equipment, hives are in the nature of a building, and probably about as durable, and I have charged the same depreciation as on frame buildings, which gives annual depreciation charge of 5 per cent on stack investment | $ 15.77 |
| Some of this equipment is in use four years, some three and some less. Total depreciation for time in use is | 44.52 |
| Leaving net sound value of investment | $276.68 |
| On which I am entitled to interest of | 16.82 |

On the basis of the following figures I figure out my costs as follows:

### Debits

| | |
|---|---|
| 270 pounds honey in the hives Nov. 1, 1920, at 10c | $ 27.00 |
| Yard labor, estimated at $3.50 | 28.00 |
| Insurance and taxes, estimated | 4.00 |
| Rent of apiary site, estimated | 8.00 |
| 4 new queens raised and used in the yard, at $1 | 4.00 |
| 1 new queen purchased and used in yard | 1.25 |
| 170 five-pound pails used | 17.00 |
| Labor and expense extracting and labeling | 8.23 |
| 20 pounds sugar fed | 1.20 |
| Depreciation on central plant | 10.64 |
| Depreciation on stack | 15.77 |
| Interest on central plant investment, sound value | 6.88 |
| Interest on stack investment, sound value | 16.82 |
| Total cost of production | $148.79 |

Against this gross cost I have the following credits:

**Credits**

| | |
|---|---|
| 5 new queens raised for use or increase, at $1 | $ 5.00 |
| 8 frames of brood taken for increase | 8.00 |
| 1 swarm taken for increase | 5.00 |
| 33 new brood combs built during the season, at 40c and 50c added to investments | 14.60 |
| 100 new extracting combs built during season, at 20 and 25c added to investments | 23.80 |
| 8.7 pounds cappings wax at 25c | 2.15 |
| 310 lbs. of honey left on hives for use of bees | 31.00 |
| Total credits for season | $ 89.55 |

Either taken for investments or chargeable against future operations, leaves

Net cost of production ----$ 59.24

My honey was all extracted and put up in 5-pound pails delivered to the honey house ready to hand out. Production amounted to:

White clover honey produced 564¼ lbs.
Mixed light amber fall honey 290½ lbs.

Total 854¾ lbs.
Average net cost of production, per 100 pounds $6.93

In my small apiary, handled at odd times, it has been necessary to estimate the item of production, labor taxes and insurance. The item of labor I have based on the figures given by H. C. Dadant in the June issue, covering 550 colonies for 1919 and 700 colonies for 1920, the highest average there used being $3.00. So I think I have my estimate high enough. Taxes, insurance and site rent may be a little high, but will do.

For my own personal satisfaction, I have kept cost figures on each individual colony. There is one striking thing I observe. Individual production runs high for the Dadant hives, but lower for the Langstroth. Besides, I cut queen cells an average of 3 times for each Langstroth colony to keep my bees together, but cut no queen cells in the Dadant, and had but one swarm. Results are proportionate.

My colonies are numbered consecutively. D used with a number indicates Dadant hive, L, a Langstroth, and numerals following the letter indicate number of frames.

| | Production. | Cost per 100 |
|---|---|---|
| No. 1D—Worked every minute | 228½ | $ 4.28 |
| No. 2D—(Swarmed) | 78 | 7.11 |
| No. 3D—(Only strong 6 frame nucleus at opening of clover) | 70¾ | 12.16 |
| No. 5D—Gave 4 frames brood and 3 queens for increase) | 196 | 3.80 |
| No. 6L10—Worked all time | 79½ | 13.29 |
| No. 7D—(8 frames nucleus divided in half May 15) | 26 | 11.80 |
| No. 8L10 — Worked right through | 90¼ | 9.19 |
| No. 10L8 — Worked right through | 56¾ | 10.48 |

Grouping the 5 Dadant hives together, which included 1 4-frame nucleus and one 6-frame nucleus at the beginning of clover, in one group, and the 3 Langstroth, which were all full colonies, 2 10-frame and 1 8-frame, I got the following results:

Average production per colony—
Dadant 120 lbs.
Langstroth 75½ lbs.
Average cost of production per 100 pounds—
Dadant $5.74
Langstroth 10.94

So much for my costs the first season, running almost exclusively for extracted honey, without attempting much increase.

I feel quite good over the season's outcome. I have no very great expense after my honey is on the shelf, and have sold my clover at an average price of 29c a pound, and the fall honey at 24½c, so I have come out all right on my little bunch of bees.

Michigan.

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## MULLINS CELL-BUILDING NURSERY AND MATING HIVE

By Jes Dalton

Having experimented and used this hive two years with uniform success, I believe a description will be of interest to American Bee Journal readers. The idea came from Mr. O. L. Mullins, of Uniontown, Pa., formerly President of the Kansas Beekeepers' Association.

To build it, use the old "Long Idea" plan. For convenience use 24 close-spaced or 21 wide-spaced frames. I always use wide spacing in everything. Build it so three 8-frame supers will exactly set on top of it side by side. Leave a good-sized entrance at each end.

Now build in solid excluders at the points that come just under the edges of the center super; I tear up an ordinary wood and wire excluder and use the wires, furnishing a perfect excluder without any extra hindrance to bees and ventilation. This divides the 21-frame compartment into 3 nearly equal 7-frame parts; the central part having no entrance except through the excluder.

### Stocking

Stock with two good colonies, headed by young queens of quiet disposition, putting a queen and unsealed brood in each end. Place combs of sealed honey and sealed brood in center part. Put covers on ends, and super on center part, and fill out with frames of emerging brood, even if you have to borrow some from other colonies.

### Operating

It is now ready for use. Graft cells (10 to 40) in center of super, using any method you choose (dry grafting can be used to get started). I use the Doolittle system. I use several of these hives and graft, in some one, every other day, transferring started cells to other building and finishing colonies of this same type. Keep exchanging the brood combs in super that have hatched for combs of emerging brood with the queens down in the ends.

This keeps a fresh supply of nurse bees up around the cells all the time, and confines all operations to the top super, and this saves lifting a super to hunt "wild cells" that they might have built over the unsealed brood in the combs you brought up.

### Advantages

I hardly know where to start in enumerating its advantages over any other system I ever tried out. To begin with, it is perfectly balanced, timed or primed all the time. For ideal cell building and nursing you have that double force of nurse bees backed by the heat of the two colonies, and a double field force that brings in honey all the time if there is any.

It is double queen-right, thus giving the best impulse to proper cell building. It is semi-automatic in that it sorts the nurse and field bees, the former remaining up on the emerging brood around the cells and the latter occupying the compartment near the entrance around the queen, if you keep it leak proof.

And as it is natural for bees to carry honey up and to store it in cells from which brood has just emerged, there is a steady flow of honey up around those cells all the time.

As the whole outfit gets more powerful, as the flow advances, you can keep raising the super you are operating on and putting empties under it. They may fill one in a few days and you may have to even super the end compartments over the queens.

You may now have a colony with some hundred pounds of honey, 20 to 30 frames of brood, bees in proportion, and if there is a more ideal place or plan to raise cells I would like to hear of it.

It will store more honey than any other colony in the yard, while turning off cells by the hundred.

### As a Mating and Increase Hive

Build and stock exactly as for cell building. Put a tight division board in center of an 8-frame super. Nail screen wire over bottom of it, nailing to division board at bottom. Bore a small entrance hole at opposite ends of super for flight holes or entrance.

Stock this super with 3 good frames of emerging brood and bees on each side, from same colony. Insert ripe cell in either side. Warmth and odor come up from below. In a few days you have two laying queens in supers, all with odor of parent colony. You can take them out with frames of brood and bees, to ship, or requeen, or increase, and restock super from queens below, add fresh cells and go right ahead.

I have taken a queen out of one of those, with 2 frames of brood and adhering bees, and requeened a colony at once, right in the midst of robbing, killing old queen and smoking all bees down, and placing these two frames with queen between them in center of super, on top of colony, in the middle of the day, with no caging or newspaper either. If you use the two upper queens this way, you now have a field force from 5 laying queens, all left on one stand and all of the same colony, odor, etc.

### As an Experimental Hive

It is a fine hive with which to study the nature of bees. Some are lots better cell starters than others, some better nurses and some are not good for either (get rid of these). It is a great drone conserver. You can place a frame of sealed drones in there and when you take the lid off you have a regular swarm of drones. Can lift a super of fresh grafted cells off, take out the combs on one side, over the cells, and watch the nurse bees work, and go and come from those cells.

While I do not expect breeders of the magnitude of Mr. Wing, of California, would take to this plan, I believe it would do the trick for Mr. F. Dundas Todd, of Ontario, who in the September issue of the American Bee Journal, pages 361-2, told of keeping the finest records I had ever seen, but was never able to raise a queen from those heavy producers; especially if he would build it double-walled and pack it.

Louisiana.

## AN ANTISEPTIC FOR BEE DISEASES

By Arthur C. Miller

Last spring Mr. F. Dundas Todd, of Victoria, B. C., sent me particulars of the Lewis treatment for European foulbrood and at the same time saying it was equally efficacious in the treatment of American foulbrood. Later I had correspondence with both Mr. W. H. Lewis, the discoverer of its application to bees, and Mr. W. J. Sheppard, Chief Inspector of Apiaries of British Columbia.

So many cures have been offered, many of which I have tested and found wanting, that naturally I was skeptical about this. But it was so well and confidently recommended that I tried it, and tried it carefully, first exactly as recommended, and then varied it until I was sure about every particular.

The article from Mr. Sheppard, in November number, gives all important particulars, so I will not repeat them, but just cite some observations.

"B.-K." was not available here, but I found a chemist who knew all about it and he told me it was a strong solution of sodium hypochlorite and is made as given in Mr. Sheppard's article. It is the home-made solution which I have used. It is so cheap that its cost need not enter into the consideration of the treatment.

After the solution is made, keep it corked, and when using it wear old clothes, because it is a powerful bleaching agent. It is non-poisonous and non-irritating, on the contrary, it is a good sterilizing agent for cuts and abrasions.

In applying it on infected combs a common bush sprayer is used. These may be bought at an agricultural warehouse and cost here 50c. An inspector having much work to do had better have one made of brass or copper, because the tin ones soon rust out.

It is wise to catch and cage the queen at the start and release her when through, because she often runs out with the bees and does not always find her way back. The bees are shaken from a comb and the comb is sprayed on both sides and then returned to the hive. Each comb is treated in the same way. The bees keep moving away from the sprayed combs, but soon go back onto them. They lick up all drops of the liquor. When all combs are back in the hive and most of the bees are back in, the queen may be released. I found the full strength solution killed most of the eggs, or at least they disappeared, and this was an advantage, for it was equal to dequeening for three days, and gave the bees a chance to clean up.

We have here a virulent type of European foulbrood and it is hard to combat, but the spray treatment does it thoroughly. In mild cases or when the disease has just appeared, one spraying is sufficient, but if the disease has been running for some time and there are many sealed cells, and particularly if the colony is weak in bees, several subsequent sprayings are necessary. This is because the gas does not penetrate and sterilize the sealed cells and as soon as they are opened by the bees reinfection occurs.

Here is the description of an experiment on a number of treatments and results. Eight colonies were infected, some mildly, some rotten with the virulent type. One treatment sufficed with all the mildly infected colonies, but several, three to four, at intervals of three to six days, were necessary with the others. Two bad cases received several treatments each and almost cleaned up, one having but two or three infected cells on each comb. These colonies were then allowed to remain undisturbed to act as a "control," as the scientists say. The disease began to spread until they were as bad as at first, literally rotten with the disease.

There seems no doubt but that the chlorine gas does destroy all germs it comes in contact with, and for me European foulbrood has lost its terror. I was not able this year to test it on American foulbrood. I have spores of that disease and another year shall infect a colony or colonies and try it out. Dr. Phillips is skeptical as to its efficacy on American foulbrood, because the spores get into the honey, and so are beyond the reach of the spray. The Canadians say it works as well on American foulbrood as on European foulbrood. Let us hope we are as successful, but American foulbrood is not half the trouble the other is.

Rhode Island.

Double colony used for cell building. In addition to 300 queens, over 250 pounds of honey was produced

### French Bee Book

We have ordered from France half a dozen copies of 'Le Mystere des Abeilles," mentioned in the editorials of October, page 395. The price of the book is about $1 in paper covers. We have a couple of orders for them already. Who wants more? First come, first served.

## UNEDITED LETTERS OF HUBER

(Continued from November)

### Causes of Swarming—Royal Cells—Jealousy of the Queen—Travel Supplies of the Swarms

Lausanne, June 30, 1828.

You are a musician, my dear girl; if I had known that you had bees at Bois d'Ely and swarms to expect, I would have called upon your sensitiveness and upon your ear for music for an observation which I have often made and which might have interested you as it did me; let us hope that it is not too late.

Let us suppose that you have just heard the charivari which indicates everywhere the issue of a swarm; you come running to witness it; there it is above your head. I see you in the midst of many bees, enjoying this fine sight, without being frightened by the tumultuous bustle of so many beings which, we are told, are armed with stings that are so dangerous—but do not believe it.

It has been recognized—and those who know how to care for them will tell you—that bees are never milder than on the days when they swarm. Yet to secure their swarms people treat them in a manner that might irritate them. Those bees, so irascible and vindictive, are never thus in such an occasion and when the proposition is swarming, the redoubtable sting is neither felt nor seen.

Take note, I pray you, of a truly balsamic odor which spreads about you; the odor of honey, which this recalls, often allays their anger. I have caused many fights to end by throwing a few drops of honey upon bees which appeared to be furious. Is honey, for them, when it is scattered in their atmosphere, a talisman which brings them back to their natural gentleness and keeps them from becoming angry?

Do you hear any discord in this numerous concert? This soft humming is, to my sense of hearing, composed only of accurate tones. This aerial music goes straight to my heart; I acknowledge that I never heard it indifferently; is it possible that what I find in it expressive, touching, melancholy and even solemn, comes only from myself or my imagination? I will not deny the natural exaltation which rises within me through this interesting event and this apparent agreement in will and sentiment in beings which are placed (by us it is true) almost at the foot of the scale.

Although I have not said a word to you about it, I am sure that you will divine at least one of the reasons which cause the periodical departure of swarms; that which is true, wise, useful, may be often foreseen. To help you a little, however, permit me to use a comparison which is within reach of the master and of the pupil and convenient for both.

If you had been but a simple shepherdess, would your kindness and your natural reasoning allow you to retain your sheep or your goats within a space of pasture that could feed but half of them? No, doubtless you would not doom them to the horrors of famine. It is to preserve the bees from this danger that nature has instructed them to seek, like nomad tribes, a salvation in periodical migrations.

The queen, which you know only by reputation, is the motive which directs the multitude, whose mother she is. They say that she can produce, in a year, from sixty to eighty thousand brood. This is enough to make up the swarm which is, the following year and perhaps sooner, to seek far away the sustenance necessary to the keeping of the new population.

(Note of .the translator.—Huber did not yet know, as we do now, that the queen lays hundreds of thousands of eggs, instead of tens of thousands, neither did he know that which was learned later by the introduction of bees of different colors, that bees live only a short time in summer, an average of about 45 days.)

As the substances which are suitable for the food of bees cannot be increased indefinitely in a limited space, they have been taught to seek far away the food which is required for a constantly growing population; it is for this that wings have been given them, with the knowledge for using them. Let us study now what has been prepared to determine their migration.

Accept my word, dear girl, until you see it with your own eyes. I assure you that I have not accepted anything till I have secured positive proof. The care with which Burnens has informed his master and friend has been a great help in this occasion.

But I must ask of you here again much faith and docility; for will you readily believe that an insect, a simple bee be susceptible to jealousy? You must accept this statement, for nothing is truer; all you require is the evidence. For this purpose a few details are necessary.

You know that a wax-comb is composed of a greater or less number of contiguous cavities which have been named cells; it is in those little lodges that the bees deposit their crops of honey or of pollen and that the queen lays her eggs when they are fit to receive them.

Have you noticed some openings much larger than the cells and with no regularity about them? They are not the result of accident; the bees have left those spaces in the thickness of the combs. Through this arrangement, whenever they are in a hurry to travel over both sides, they can do it much more promptly than if they had to go around the edge of the comb. It is, if you please, like public squares or alleys; in our cities similar spaces have the same utility. Among the bees they have still another; it is there that they build the royal cells of which you have probably heard. In their original shape, those cells resemble an acorn cup, later they will become, as the work progresses, inverted pyramids, at first more or less truncated. It is when the royal cell is only in the shape of a cup and is not deeper than two or three lines (one-fourth to one-sixth inch), that it may receive the eggs that the queen lays in it, perhaps in passing, while she goes from one side of the comb to the other. I am inclined to believe that it is a trick devised by the architect bees. That which confirms this conjecture is that the bees, being unable to build the royal cells horizontally in the comb and give the same direction to the pyramidal part without extending it too far between the parallel combs, in the space reserved for passage, could do nothing better than fasten the royal cell cups vertically, under the edge of the spaces intended for passage; then the pyramidal part could be fastened to the cup and extended vertically in the open space below.

There is another reason which explains fairly well why the royal cells must not be built in the thickness of the comb. The queens, larger and longer than the workers for whom the ordinary cells are intended, would not find in them a space sufficient for their ulterior development.

The queens, in a hurry for laying and finding all the small cells occupied, pass to the other side of the comb through one of these passages, but perceiving the orifice of the outlined cells, insert their abdomen into them after having ascertained that they are not already occupied; they fall thus in the snare which has been prepared for them.

As fast as the small cells are emptied, through the hatching of the worker bees, the queen lays in them, as well as in the different cell cups which she finds open and empty. Her eggs will produce successively royal larvæ and nymphs more or less advanced. It is not only by supplying a broader and differently located lodging that the bees bring to the queenly condition those which were intended only for simple workers. A more exquisite food, perhaps more stimulating and more abundant, brings about the extension of the queen organs in the cradle and especially the development of the sexual organs. Mr. Bonnet, during the visit which he paid me at Pregny, saw in one of my hives, from which I had removed the queen, more than 20 royal cells begun.

A very singular and very important thing which has not been sufficiently noticed and of which I understand but now the usefulness, is the perfect coincidence of the laying of drone eggs, always observed in the season of swarming, with the building of royal cells. A secret link assuredly exists between these two great preparations.

Here we are again reduced to admiration, is it not enough? Without this arrangement the young queens would run the risk of never becoming mothers, or of securing but imperfect mating in case their fecundation should be too long delayed (See next letter.—Ed.), but, as has been said, everything is in harmony in the natural history of bees.

Follow me another moment and you will see a new point.

For me to have told you that queens were susceptible to jealousy, I must have very evident proofs to give you of so singular a thing.

By what means can they be brought to that and how can a feeling of jealousy and irritation be inspired in them, through the accomplishment of the views that Nature intended?

Let us return to the royal cells; it is there that the thread starts which will lead us out of this labyrinth. Their construction cannot be instantaneous; several days are needed during which many workers are employed successively to build a pyramid out of that which at first was shaped only like an acorn cup.

The queen, after having deposited her egg at the bottom of the cup, continued to lay elsewhere very peaceably without giving the least sign of alarm; it was only when the pyramid was finished that we noticed in her bearing a beginning of restlessness. The royal larva was then filling the cell to its extremity, she was about to pass to the state of nymph, during which she has no longer need of any food. The closing of the cell at that time proves it incontestably.

The agitation of the queen increased as fast as the young larva grew towards its goal; from a very noticeable displeasure the queen passed very quickly to anger, and it is not to be doubted that her rival was the object of it.

When we see her bending her energy upon her destruction and killing her in her cradle when the bees do not put any obstacles in the way of this fury, do you not recognize that the most cruel jealousy has been the only incentive of it? The intention of nature would not be fulfilled if that of the queen was accomplished; if she could kill her rivals in infancy there would be no hopes for swarms, and the colony would perish; the workers taught by kind Nature to oppose this, do it effectively, by surrounding the royal cells with guards numerous enough to prevent the effect of the queen's rage; they always succeed in doing so by opposing her approach without ever using their sting against this mother so cherished; they succeed in drawing or driving her away, by climbing on her back and striking her with their antennæ, which is now known to be a very expressive language.

The bees, the ants, like all the beings which live in association and whose operations require a sort of concert, must understand each other and have some means of communicating to one another their thoughts, their needs, their desires, their fears and above all their dangers. Among insects which we have observed, the repeated and varied touching of the antennæ warn them and instruct them of what they need to know.

Another means of information instructs the bees of that which interests the queen; I have made sure of that in case of her death or her disappearance. To convince oneself of this, it is only necessary to remove the queen from the bees; one will see nothing in the first moments to prove that her loss has been detected, but at the end of a half hour one cannot doubt it. The confusion which reigns in the hive, the abandoning of the brood, the running about of the workers, their precipitate flight at undue hours, their researches around the hive, later the re-establishment of good order and especially the preparations which they make to rear another queen prove that they have perceived the loss, but do not explain how.

It is always the old queen that leads the first swarm; she goes with it after showing by her growing agitation that she gives up to the terror caused by the existence of young rivals in the cradles, but as she does not wait until they have reached the end of their growth and can leave the royal cell, she goes with her swarm without having done any harm to her young rivals; murder takes place only after the departure of the old queen. The one who succeeds immediately finds rivals, at her birth, they are very dangerous for her; their age about equal to hers does not permit her to wait until they also hatch, but she pounces upon the still sealed cells, pierces them and kills with her sting the royal nymphs of which she perceives the existence through some unknown sense.

The appearing of royal cells and the jealousy which they inspire in the reigning queens are therefore truly that which procures the accomplishment of the views of Nature and the means employed by the latter to induce the bees to fly away from their native home and seek their conservation by periodical migrations.

I thought that I had seen and faithfully described everything that has reference to the natural history of swarms; that which has just happened to me proves that one can never be too careful or too modest. I find in a forgotten memorandum of mine the detail of an observation which had taken my attention in the old days and of which I had not retained the recollection; it is dated of the year 1816.

That year which has properly been called the year of famine, did not open in Geneva as likely to be as fatal to bees as it was to all our crops. The fine blooming of the early spring, the warm and moist temperature which reigned at that epoch caused the honey and pollen to abound in the blossoms. The drones, which appeared early in all our hives, announced early swarms; that expectation was realized; I never saw so many; 10 or 12 hives which I had at the end of winter multiplied by the end of June to the number of 60.

I was then using leaf hives, glassed only at their posterior end. That is where our attention was directed, when we recognized the well-known signs of swarming; that moment is when all the bees, excited by the irritation of their queen, think only of following her, leaving their native home and going elsewhere for a new country. That is what every one knew, or should have known, according to the excellent memoirs of Reaumur.

Let us see what will happen to those fugitives, leaving foolishly their apparently well furnished homes, supplied with everything that they needed, to prefer to it such homes as they would accidentally find and which would undoubtedly be lacking in what would be to their convenience.

What will happen to them if the weather changes at the moment of their entrance into a tree trunk or in the cavity of a rock, especially if the bad weather is prolonged 5 or 6 days? That is not difficult to divine; they will starve infallibly. Their greatest torment will be the discouragement into which they will fall when they will see that their queen, finding no cells in which to lay her eggs, will be compelled to drop them in the air, and consequently that all hope of posterity will vanish. (This discouragement in similar cases has been observed by others).

No, no. it is not at a time when these beings which prove of so great an interest to us have the greatest need of a superior direction that it is refused to them.

When the bees are about to leave their home forever, when everything seems to be in confusion among them, one can see them pounce upon the combs in which the honey has been stored, which are always the farthest away from the entrance. We have seen them entirely strip 3 large combs of honey in a few minutes. Time pressed, it was necessary to follow the queen, and they knew it.

We made this observation on so large a number of swarms in 1816 and since that date, that I have no doubts whatever upon this matter.

(To be continued)

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## BEESTINGS AS CURE

By A. F. Bonney

When first the writer began in beekeeping, the bee journals were filled with accounts of cures of rheumatism by the use of beesting poison, commonly supposed to be formic acid. He combated this idea, and it was not long before such articles became rare. Recently, however, one appeared in the American Bee Journal, and I wish to advance a few ideas to combat the fallacy, for such the medical men generally consider it, if we except our friends, the Homeopaths.

Rheumatism has always been the despair of physicians, of the Tradition or Regular school, the "Allopaths," so called. For generations the disease was supposed to be due to uric acid in the blood, but that theory was long since abandoned, and we now know that it is caused by the absorption into the circulation of poisonous material, pus, from some part of the body; decayed teeth, tonsils, liver, kidneys, in fact any part of the body may be the cause; any "treatment" which does not remove the cause will fail of permanent results. This has been demonstrated so many times that it is, I believe, unquestioned.

No matter how subject to rheumatism an individual may be, there are times when he is entirely free of pain, and the last remedy he took gets credit for the "cure." However, it is but a question of time before there will be another attack, when other remedies will be used; a "patent" nostrum, a "rheumatic ring" made of iron, and sold at from 50 cents to $5; a horse-chestnut or potato carried in the pocket, hot baths, beestings, or some of the "pathys." That they all fail the prevalence of the disease is proof.

But this article has to deal with the beesting cure, and in this question, as in all others, we must go down to fundamentals. Medical men, of the Traditional school, studying the matter, found that a treatment by a serum to antagonize the mixed infection of the rheumatic poison, gave good results, but was not entirely safe, and the matter of a radical cure of rheumatism is still an open question. It is hoped that further investigation will develop a certain remedy.

Let us now see where the idea of a cure by the use of beestings originated. Along about one hundred years ago a Dr. Hahnemann, of Leipsic, conceived the idea that any drug given a person which would produce certain symptoms in them would cure a disease which gave rise to similar symptoms. "Similia similibus curantur," or "like cures like"; therefore, a drug which would produce a fever would cure a condition of the system which gave rise to fever; and a medicine which produced a certain kind of a swelling would cure a disease causing such a swelling; therefore, as the sting of a bee caused a swelling similar to swelling caused by rheumatism, the sting of a bee would "cure" rheumatism, and should, more logically, cure urticaria, or "hives."

Those were the days before the medical world found that many diseases are caused by germs, a fact which is not now contradicted, except, of course, by uninformed persons.

Not only was Dr. Hahnemann's idea based on a wrong premise, but his remedies were given oftimes in infinitesimal doses. He took an herb and extracted the juice, and this he called "Mother Liquor." It was not standardized, as all drug remedies are today. In other words, a fluid extract or tincture of a drug must contain a certain per cent of the active principle of the drug; morphine in laudanum, aconite in tincture or fluid extract of aconite, and so on. The "Mother Liquor" of Dr. Hahenemann might have contained 5 per cent or 40 of the active principle of the substance used.

Of this "Mother Liquor" the Homeopaths took one drop, put it into 100 drops of alcohol, and mixed it with "one downward shake of the hand." This was absolutely essential. To make the next strength, or "potency" one drop of the first mixture was taken, added to 100 drops of alcohol and mixed with two downward shakes of the hand, and this was continued to as "high" as the thirty-second potency, but no matter whether the third or last potency was used, there was but one drop of the "Mother Liquor in all, which means that in the third there was but one ten-thousandth of one drop of "Mother Liquor" used. This was far too powerful to be used undiluted, so a teaspoonful of it was added to a cup of water, and a small dose given at intervals of time.

Years ago the Homeopaths used to secure beesting poison by letting the bees sting a piece of sponge. The poison was then extracted with alcohol—one of the most efficient of germicides. This was diluted to the third or thirty-second potency and given as a "cure." If the third potency was used, a teaspoonful to the glass of water, the patient got approximately one eighty-thousandth of one drop of beesting poison to the dose, assuming that the solution of the poison was about the strength of the drug "Mother liquor."

Later on, some one, fully as brave as the man who first ate an oyster, broke away from the Homeopathic idea and began giving the beesting poison by way of the circulation through the skin, and found a few persons who would endure the pain of the sting hoping for a cure, but the writer has investigated many of these alleged cures, with no satisfactory results. People claimed they were relieved, or were free of the disease, while others confessed that they had rheumatism "just as badly as ever," when reporting later.

Let me ask this question: If the poison of the sting of a bee, or several of them, is a cure for rheumatism, is it not more than likely that the hundreds of thousands of intelligent doctors in the world would have found it out years ago? Nothing can be more certain.

Another thing: A positive proof that the sting of a bee will not effect a cure is that many beekeepers who have written me assert that while they are stung many times daily, five to seven months in the year, they still have rheumatism. Let us drop the term "some form of rheumatism' which the laity loves to use, for there is but one kind of the disease, manifested, of course, in different parts of the body. If the pain be in the lumbar region it becomes Lumbar rheumatism, or Lumbago; if in the region of the great sciatic nerve, it is called Sciatic, in the muscles, Muscular rheumatism, and so on; but the cause is the same, the manifestation, the lodgment of a poison in a certain part.

If the use of beesting poison through the skin would cure rheumatism, the same remedy given internally would produce the same result, and certainly be much less painful.

There is the same objection to vaunting the beesting "cure" as in the use of patent nostrums, it delays the appeal to the educated medical man who has an intelligent hope of finding the cause, and by treating that relieve the patient. I remember one case where a lady, Mrs. M. W., was a severe sufferer from rheumatism; I found that she had a mouthful of badly decayed teeth, and suggested that they were probably the cause of the most of her trouble; she tried, I believe, everything she could think of before having the teeth extracted,. but finally got to it. She began to improve at once, and now, two years after, is relatively free of the disease; but, the tissues were altered by years of irritation, and she suffers slightly at times, and possibly always will.

A number of years ago I sent out a thousand slips stating that honey was a cure for rheumatism, taken in tablespoonful doses, no water to be drunk for two hours after a dose was taken. I received several letters thanking me, as the writers had been cured. One party sent me a dollar. He must surely had been benefited.

I have no doubt whatever that a free use of honey will do as much to cure rheumatism as the sting of the bees will, perhaps more, for the poison of the beesting affects a person but locally. It is not absorbed into the general circulation. If it was it is more than likely that we should soon have many reports of persons killed by the poison, as we now hear frequently of disastrous results following the stinging of some one by bees.

Iowa.

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## HONEY HARVEST EXPERIMENTS

By John Protheroe

The July number of the Bulletin de la Societe Romande d'Apiculture gives the results of some interesting experiments by the brothers Tricoire:

"1. On the capacity of the honey stomach of the bee, the weight of honey carried, and the time taken to load up.

"We constructed small cubes containing exactly one cubic centimeter of honey. These were closed so as to give access to only one bee at a time. The refilling of these cubes by ourselves and the emptying of them by the bees, several times, allow us to state that it takes forty visits by the bees to empty them completely. The average capacity of the honey stomach of the bee is, therefore, 25 cubic millimeters. The specific gravity of our honey being 1.4, each bee carried 35 milligrammes of honey. The time taken to load up this burden was 180 seconds, that is to say, 3 minutes.

"2. On the number of flowers visited by a bee to collect her burden during a normal honey flow.

"This experiment was made on buckwheat flowers in the month of August. The figures given are the average corrected by several observations. The search, that is to say, the time taken in going from one flower to another, took 5 seconds. The collection of nectar took 3 only, making a total of 8 seconds per flower. The bee therefore visits with profit 7 flowers a minute, or 420 to the hour.

"The above experiment, often repeated, has shown us that the bee fills her honey stomach in three minutes; divided by 3 seconds, the time spent on each flower for the collection of nectar, we find that it takes 60 buckwheat flowers to make a load. These 60 flowers multiplied by 8 seconds, the total time spent on each flower (searching and exhausting), make 480 seconds; that is to say, 8 minutes.

"For our bees the most distant field is 3,500 meters (a little over 2 miles), the nearest is 200 meters, and the average 1,800 meters. A bee travels at a speed of 1 to 8 meters a second; the average being 4.50 meters, or 270 meters to the minute. The time taken to cover this average distance will, therefore, be between 6 and 7 minutes. For good measure, let us take 5 minutes for going, there being no burden, and 7 for the return with the greater weight. With the 8 minutes for search and loading up, that gives a journey every 20 minutes. As the flow of buckwheat honey only lasts about 3 hours per day, in the morning, every field worker makes scarcely 9 trips a day."

Virginia.

## BEEKEEPING IN BULGARIA

In the accompanying photograph is given an exhibit of American beekeeping appliances in Bulgaria. Mr. Nicholas Baracoff, the exhibitor, on the extreme right, was instrumental in making a public exhibit of this material, which attracted the attention of all beekeepers and of the Government authorities who saw it.

His opinion is that a resumption of normal rates of exchange and of normal transportation facilities will mean the introduction of many American methods in Bulgarian bee culture.

There are already many beekeepers keeping bees by modern methods, but they are the exception rather than the rule.

Exhibition of American bee supplies in Bulgaria

# THE EDITOR'S ANSWERS

**When stamp is enclosed, the editor will answer questions by mail. Since we have far more questions than we can print in the space available, several months sometimes elapse before answers appear.**

### Loss of Queen

About the middle of September, I caught a little swarm of bees. I put the bees into another colony and took the queen and turned her in at the entrance of a hive whose queen was getting old and worthless. I kept watch to see which one the bees would kill, but I did not find either of them, the next day, at the entrance, as expected. I looked into the hive and found the young queen, but could not find the old one, to kill her, and the robbers got so bad that I quit. On the third day I found the young queen dead outside. What was the reason she was killed, after having been accepted?
IOWA.

Answer.—I think I can explain what happened: The old queen was worthless, as you thought, so the bees tolerated the new queen, When you went back to look for the queen, the robbers that were thick made the bees angry and they treated that new queen as a robber. You have probably noticed that all those who succeed in introducing queens urge that one leave the colony alone for a week or more. The purpose of that is to prevent the queen being killed as a stranger, before the bees got entirely used to her All the beekeepers who do much introducing have more or less experience in that matter and all agree that it is the appearance of robbers that causes the bees to kill a queen that has apparently been accepted. She is only tolerated, but would soon be considered as the true mother if such an event did not happen.

### Dadant Hives—Average Yields

1. How much does a Jumbo frame of honey weigh?

2. About what would the general average honey yield be for bees in Modified Dadant hives in good location, having good care, counting only strong colonies?

3. Why is the per colony average for the various States so low?
NEW YORK.

Answers.—1. The surface of a Jumbo frame is about equal to 10 sections. If it is well filled and all sealed, it may weigh as much as 10 pounds. But it may run much below that, even when apparently well filled.

2. Our location is only middling good, and we have always figured on an average of 50 pounds of extracted honey, one year with another. But if you count only the strong colonies, it is quite another thing. The question would be: how strong a colony would you accept as a yielder? You might run it into 150 pounds average.

3. Perhaps the explanation is that so many colonies of bees do not get any care and that many locations are unfavorable to honey production.

### Honey Vinegar

Is there such a thing as honey vinegar? How is it made, and is it any better than any other vinegar?
MISSOURI.

Answer.—Honey vinegar is made by mixing 1½ to 2 pounds of honey with a gallon of water, adding fruit juice enough to start fermentation. After the alcoholic fermentation is well started, the acetic or vinegar fermentation will start if the liquid is sufficiently exposed to the air. Its quality is that of the best vinegars, although it is not as good, perhaps, as vinegar made from high-grade wines. But it is certainly above the average cider vinegar.

### Do Bees Dance?

My bees seem to be doing the "shimmy" on the alighting board in front of the hive. They move back and forth about one-half inch with heads down as if trying to polish the board. Is this anything serious?
FLORIDA.

Answer.—No, it is not serious, for we have seen healthy colonies do that often. It really seems to me as if the bees were polishing the front board. Perhaps they are. Whoever finds a good explanation for this action will confer a favor on us by giving it so that it may be published in the American Bee Journal.

### Loss Through Manipulation

Upon opening a hive with the use of smoke, the bees at once fill themselves with honey. I would like to know what disposition is made of the honey so eaten; that is to say, do the bees afterwards re-deposit this honey in the cells, or is it consumed by them? I wish to know if there is a loss of honey each time the hive is opened, or whether it is merely temporarily withdrawn and afterwards re-deposited.
VIRGINIA.

Answer.—I don't know, and it would be somewhat difficult to find out, positively. However, I will submit some surmise:

The average European beekeeper seems to think that whenever you disturb a hive of bees, if it is ever so little, you confuse the bees and they lose both time and honey. Personally, I have never thought that the opening of a hive with smoke did much harm, if any at all. I have seen bees fly out to the field through the open top of a hive, while manipulating it.

There is, however, a question of how greatly your bees are disturbed. If you smoke them thoroughly and compel every bee to fill with honey, just as they do when they prepare to swarm, there will evidently be a lull in the work; they may hang in clusters for hours and consume considerable honey, both through the digesting stomach and through the wax-producing organs. But what need is there of so much smoking? It is merely necessary to frighten such bees as seem disposed to show anger, and make those bees fill their honey sac.

Undoubtedly the honey is re-deposited in the cells, when the excitement is over. But how much of it, if any, is consumed, is still an open question. It will be for some new Huber to investigate this matter. Huber's narrations of how the bees fill with honey when ready to swarm is exceedingly interesting.

### Heating Extracted Honey

In the October issue of American Bee Journal I note the Texas "Rules for packing bulk comb honey," page 410. "Extracted honey must have been heated to not less than 120 degrees," etc. I keep some 5 or 6 colonies for my own pleasure and this year will have some 300 pounds to sell. I usually put it in Mason jars. Will you kindly tell me whether it is absolutely necessary to heat it, as I never have done it? It sometimes becomes granulated in the jars. Will the heating keep it liquid? Is there any way to prevent granulation?

NEW YORK.

Answer.—Yes, heating will prevent granulation, and we think that this is the only reason why they require it. But it is not absolutely necessary that you should heat your honey. I think it is much better to tell the people to whom you sell honey that it will granulate, and to explain to them that it is just as good in that shape. I have always thought that honey that has been heated loses some of the essential oils that come from the blossoms. Of course, if it becomee the custom all around to heat it, we will have to follow suit. Be sure not to overheat it.

### Bees Gnaw Cloth

I have some colonies of bees that last winter gnawed the cloth (cotton) that I laid over the brood frames. I would find great quantities of lint scattered over the bottom board and the cloth ruined.

How would it work to lay a piece of screen wire cloth over the frames and *then* put on the top packing?

MISSOURI.

Answer.—Bees do pull cloth to pieces, by taking hold of the little threads that project, and pulling till they make a hole. The softer the cloth the more easily they will make holes in it. If you use khaki or coarse gunny they will be slow about making holes in it and will not have any lint scattered about the bottom board. For winter we remove the cloth altogether. Wire cloth might do as you suggest. At any rate, it is worth trying. We use straw mats over the combs, with absorbents above them. But old carpets or gunny sacks would do just as well. If you use wire screen let us know how you succeed with it.

## ODDS AND ENDS

### Special Course in Beekeeping

The Iowa College of Agriculture is offering a special course of twelve weeks for beekeepers which looks very attractive. Many are so situated that they cannot take a long course but will be greatly benefited by the opportunity here afforded. The course opens at Ames on January 2, 1922, and continues until March 22. With the beekeeping work is combined instruction in poultry and horticulture. The student is allowed considerable latitude and can devote most of his time to the particular thing which is most attractive to him. The course is divided into two six-weeks terms, so that those who cannot stay for the full twelve weeks can take six weeks and finish the course at another time.

Any one interested in this special course will do well to write Prof. F. B. Paddock, Ames, Iowa, for the booklet giving full information concerning expenses, etc.

In addition to this course there will be a short course of four days during Farm and Home Week the last week in January.

### Southern California Fair

San Bernardino County Beekeepers' Club captured first prize for feature display, at the Southern California Fair at Riverside, in competition, with Riverside and Orange counties, which received second and third places, respectively.

The exhibit was most attractive and included all kinds of honey, beeswax, bees, canned goods put up with honey, and other products of an apiary. The first money amounted to $100, in addition to the feature.

### Bee Jelly

The November Journal just received. On page 458 you quote a statement of a little boy calling honey "bee jelly." I laughed when I read the article. I have a little nephew "Thomas J. Hoyes," of Rensselaer, Indiana; when he was 21 months old, at our dinner table, in asking for the honey he said: "I some jelly, make a bee out there," and as he made this request he pointed first to the honey and then turned to the window and pointed to the bee hives.

My wife and I have enjoyed repeating this little fellow's statement to almost everybody who comes to our home. Frank Foltz.

Indiana.

### Father of Large Family

A few days ago, at Warsaw, Ill., occurred the death of an old beekeeper, Mr. J. B. Gehin. He was born near the French line of Alsace-Lorraine, emigrated to the United States about 1878, and became an American citizen. He was the father of 10 children, 42 grandchildren and 15 great grandchildren. No race suicide there.

### Illinois Convention

G. M. Withrow, Secretary of the Illinois Association, writes to advise that the Illinois convention will be held at the St. Nicholas Hotel at Springfield on December 14 and 15, instead of the dates announced in our November number. Illinois beekeepers will note the change.

### Mississippi Awake

Perhaps nowhere is more active effort being put forth to advance the interests of the honey-producing industry than in the State of Mississippi. The latest from her borders is the report of the meeting of the September field council of all the extension workers of the College. At this meeting the interests of beekeeping was the subject up for special consideration. The needs and opportunities of bee culture in Mississippi were placed before this group of field workers in such a way as to enable them to appreciate the value of the beekeepers' contribution to the welfare of the State.

### Iowa Convention

Secretary Paddock announces that the Iowa convention will be held at Waterloo on December 15 and 16.

### Sippel to Montana

O. A. Sippel, formerly of Guelph, Ontario, is the new man in charge of the beekeeping work at the Montana College of Agriculture. Montana has recently provided for bee inspection and now that the subject will be given serious attention at the College of Agriculture, we look for real development in beekeeping within her borders.

### Rea to Pennsylvania

Announcement has recently been made of the resignation of George H. Rea as beekeeping specialist at Ithaca, N. Y., to accept a position as Professor of Extension in Apiculture at State College, Pennsylvania. He was one of the first extension men in the field, giving attention to beekeeping, and his work has been very successful. We feel that the beekeepers of Pennsylvania are to be congratulated upon Mr. Rea's return to his native State. No announcement has been made as to the selection of a successor for Mr. Rea in New York.

### Bee Clubs Popular

The boys' and girls' clubs are increasing in membership and interest in all sections of the country. There are numerous reports to the effect that the bee clubs are doing much to raise the standard of beekeeping in many localities where the old-time box apiaries are the rule.

### Another Crazy Reporter's Story

The statement has been widely published that B. M. Hatfield, an oil operator, has a hive of bees in the gear box of his automobile. "They travel with me over the country," he says, "When I stop they all pile out and gather honey. When I honk my horn they all come back home again."

The public is being fed constantly with such impossible tales about bees and honey until the general view of beekeeping is very much distorted.

### The Latest Booze Story

According to a Virginia paper, officers searching the premises of a bootlegger in that State were for a long time unable to find the place where he stored his supply of liquor. Eight gallons of moonshine was finally located in the beehives in the front yard.

### A Florida Proposal

The Florida State Beekeepers' Association is planning to sponsor and guarantee the production and sale by its members, of early in the season, dependable, high-grade queen bees and package bees.

It is hoped to furnish a considerable quantity of the package bees the coming spring (1922); and queen bees just as soon as tests and experiments now under way have developed a product worthy the attention of discriminating buyers.

### Why Prices are Low

Only the beekeepers themselves are to blame for the low honey prices. The first part of August I got a letter from one of the large firms in Chicago. They asked for a shipment of honey and said they were paying 10c for white clover. I answered them that I had no honey to offer at that price. Two weeks ago I got a letter again from the same firm, saying they could use some honey at my price. You can't blame the jobbers for paying a low price if the beekeepers are satisfied, but I don't think they got much honey at the price they offer in the bee papers.

F. W. Luebeck, Rt. 2, Knox, Ind.

### Cornflower for Honey

A small plot of batchelor's button or cornflower was sown by the boy under a window. The flowers began early in the summer. I noticed the bees on them before the buds had opened. From that time on the bees visited the flowers from early morning till late at night. Even after the flowers had dried up the bees would come and work over the dried pods. They must be great producers of nectar. H. O. Hutton, Washington.

### Beekeepers' Meeting at Gainesville, Fla.

The Florida State Beekeepers' Association held its second annual meeting at Gainesville, Fla., on October 6 and 7. During the two days of the meeting a splendid program gave those attending an opportunity of learning just what has been and could be done with beekeeping in Florida. Mr. E. R. Root, Wilmon Newell and Dr. H. R. Trusler were among the principal speakers. The most interest was shown in the proposed "Queen and Package Bee" business, which the Association will sponsor. Plans for advertising Florida honey during "Florida Honey Week" (third week in November) were also formulated. One feature of the meeting was a guessing contest of the different Florida honeys, prizes being high-bred queens.

Frank Stirling.

### Comments From Dalton

I wish to approve every word in L. B. Smith's article, page 407. It is a pity he did not write a whole page. I pack exactly as he does and my experience is exactly his in every way. It is the first article on wintering printed in a Northern journal that fitted the Southern condition.

I was amused at the bees in the sorghum mills, page 408. In Louisiana we have pure sugar cane mills making sugar syrup, a little mill about every mile.

When I first came to Louisiana J. F. Archdekin was having it hot and heavy with several of these little mills. They grind in balmy, sunny days in late fall here when there is not a bit of honey in the fields. Archdekin moved four miles down river and I occupied his territory, but the syrup makers still cussed Archdekin, and I marvelled that his bees, after they got in the habit of stealing syrup came back to these mills for years. He finally moved to Missouri, but "his bees" still come back and steal syrup and annoy the syrup makers greatly. Get the point? Lay it all onto the beekeeper that has moved away. Jes Dalton.

### Safe Introduction

On page 367, October, a reader wishes to know how to introduce queens to cross hybrid bees. I have done so safely many times the past summer without the loss of a single queen.

Just kill the queen in the hybrid colony and make sure there are no queen cells. Over the hive body place a sheet of newspaper with a hole punched through but with edges of paper still coming together. Place the queen on a frame of emerging brood and put this nucleus in a hive-body and set over the colony where the queen has just been killed. Put on the cover and leave alone for two or three days. The frame of brood with queen may then be put down and the upper story removed. I believe this is the best way I have ever tried.

Irving B. Long, Missouri.

### Poor Year in British Columbia

Referring to this season's crop, I am sorry to say that it has been worse than nothing. While much of the world was sweltering under abnormal heat and praying for rain, Northern and central British Columbia had cool weather and a most exceptional rainfall. One correspondent says that July was wet, August was wetter and September wettest. The oldest inhabitant can recall nothing like it. Hay growth was luxuriant, but it is all in the fields. Bees could not fly, so we are feeding up for winter. I may add that southern British Columbia has had a short, cool summer, with a mighty poor crop. Vancouver Island is worse than a blank and much of the lower Fraser district is the same.

F. Dundas Todd, Victoria, B. C.

### A Peculiar Accident

Phil Nichols, an Indiana beekeeper, was recently reported as having been painfully burned when his cotton bee veil caught fire from his smoker when he was taking off honey. There was a sudden flash, when the veil caught fire and his head was instantly enveloped in flame.

### Introducing With Cell Protector

To introduce a new queen. I first kill the old queen and place the new one in a West spiral cage with feed cup in place. This cage is then placed in the center of the hive between two brood combs for 24 hours. The food cup is then removed and a plug of wax made from cappings or soft comb and a little honey used to close the opening of the cage. The plug is put in just before dark in the evening and must not be too large or hard. The bees will remove the plug and release the queen.

Should there be a virgin or a cell left in the hive the bees will not feed the queen in the cage, leaving her to starve. This is the best way I have yet tried for introducing either virgins or mated queens.

British Columbia.

Hans Johanson.

### Another Method of Introduction

A daughter of the best queen purchased this year was in a queen-mating nucleus. Wishing to break it up, and fearing somewhat to introduce by the regular method so late in the year, for a miss might ruin the colony, I put the young queen in a provisioned Miller cage. This was placed on the top bars of the third story and left there for five days. Then, just at night, I ran her into the entrance of the hive with a puff of smoke to help her along. Four days later I found the carcass of the old queen in front of the hive. I clipped the young queen in a special manner in order to know which had met its fate.

The plan looks like a good one to use at the close of the season, with the odds all in favor of the young queen, if the bees do not ball her.

New York.

E. M. Barteau.

### Notes From California

Southern California beekeepers are up in arms, so to speak, regarding the State Association being taken to the north part of the State. It was decided to call a mass meeting of all the good and true beemen of South California, the first week in November, to try and work out some plan whereby the many hundreds of beemen may become more closely united in a common cause and interest.

What we might term the rainy season in California has just commenced (October 3), with a generous rain storm, precipitating from one-half inch to 2½ inches of rain throughout the Southland, and forest and brush fires have been raging through different sections, and the loss of colonies, within the fire zone, has been very heavy, we fear. The rain of the past few days has helped to quench the fires, and danger is about past for any general fires this season.

Prospects bid fair for the starting of another bee magazine in Los Angeles, serving the coast in general. Plans are under way at this time.

The honey market is practically devoid of any action; the tone is a little stronger than 30 days ago, but nothing to boast of; few car loads of honey moving east; some local shipments, in case and ton lots, to the middle west; quotations above and below 10c; market dull; crop is estimated by us, based on all information available, to be 31 per cent.

G. W. Bercaw.

### New Jersey Convention

The New Jersey Beekeepers' Association will hold its Annual Convention in Trenton, N. J., on January 12-13, 1922. Mr. Crane, of Vermont, and Messrs, Stewart and Bedell, of New York, will be on the program, as well as other interesting speakers.

Elmer G. Carr, Secretary-Treasurer.

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### Bee Meeting at Burlington

The beekeepers of Des Moines County, Iowa, will meet at Burlington, Iowa, on January 10. G. H. Cale will be the principal speaker.

### Indiana Convention

The Indiana Convention will be held on December 15 and 16, this year, the same dates as Iowa.

### Ontario County

The Ontario County, New York, beekeepers will meet at Canandaigua on December 2 this year.

### British Columbia Beekeeping

A recent report on British Columbia beekeeping gives the total number of colonies for the Province as 10,329, from which was produced 309,074 pounds of honey in 1921, or an average of 30 pounds per colony. The Lower Fraser Territory leads, with a production of 116,614 pounds.

The wholesale price of white extracted honey is estimated at 29 cents per pound, and the retail at 35 cents.

### National League Emblems

These can be used either at local, state or national meetings. They were made by direction of the American Honey Producers' League and can be supplied either in gold or bronze, pins or buttons; warranted to last as long as the wearer; not too large, and very pretty. Each 50 cents, dozen $3.60. Send order to American Bee Journal. Hundreds of them are in use through the country.

### League Notes

On January 30 and 31, 1922, the second annual meeting of the League will be held in Salt Lake City, Utah. Every State and local association belonging to the League should send a delegate to the meeting. All associations, whether members or not, are urged to send representatives, as much of importance will occur. The future of the beekeeping industry lies in the action of this assembly. The Secretary wishes that every one who will attend will notify him as soon as possible, so plans can be made for the program.

The League advertising campaign is a success. The requests for the honey recipe booklets are pouring into the Secretary's office at San Antonio. The extent of this publicity can be expressed geographically. Requests have been received from as far north as Treadwell, Alaska and St. Johns, New Foundland, south to the Canal Zone, west to the Philippine Islands and east to the Bermudas. Every State of the Union and Canada are represented many times. Cuba, Porto Rica and the Hawaiian Islands come in for their share. Honey dealers and grocers have ordered these booklets in large quantities. If you want a copy sent to your friends, send in the names to the Secretary, Box 838, San Antonio, Texas.

The best thing about the campaign is that the trades papers are making mention of it and giving much favorable comment. The Market Reporter states that the campaign is in a large way responsible for the increasing demand for honey. The Bakers' Review, The Wholesale Grocery Review, and even System have nice accounts of the League. Printers' Ink and Class will print articles on this activity of the League.

Do you realize what the League means to you? It is costing the most of you one dollar apiece and you are not taking advantage of half of the benefits of the League. We have one individual membership, taken in order to get the protection of the League warning notices. Have you ordered yours yet? They cost the membership but 10 cents each.

The time is at hand for the State Association meetings. The League has accomplished wonders with the small amount of aid the various Associations were able to give. Every beekeeper should urge that his Association retain its membership and see that a delegate be sent to the Salt Lake City meeting. The advertising campaign is in no small way responsible for the recovery of the honey market. This has put dollars into your pockets. It has defended beekeepers in court. It has done a thousand and one services for beekeepers. It has made good. You as a beekeeper cannot **afford** to be without its services. Give the League your support for 1922 and watch the demand for honey reach a place where you will have to hustle if you provide your part.

H. B. Parks, Sec'y.

## CLASSIFIED DEPARTMENT

Advertisements in this department will be inserted for 5 cents per word, with no dis counts. No classified advertisements accepted for less that 35 cents. Count each initial or number as one word.

Copy for this department must reach us not later than the 20th of each month preceding date of issue. If intended for classified department it should be so stated when advertisement is sent.

### BEES AND QUEENS

ATWATER HONEY—Supply your customers.

FOR SALE—Spring delivery, 1922, 2 lbs. bees and young three-banded Italian queen, $5. Special price on 2-lb. queenless packages. Health certificate with each shipment. Satisfaction guaranteed.
J. L. Leath, Corinth, Miss.

LARGE, HARDY, PROLIFIC QUEENS—Three-band Italians and goldens, pure mating and safe arrival guaranteed. We ship only queens that are top notchers in size, prolificness and color. After June 1. untested queens $1.50 each, 6 for $8, 12 or more $1.40 each, 25 or more $1.25 each. Tested queens $3 each, 6 for $16.
Buckeye Bee Co., Zoarville, Ohio.

BURLESON ITALIAN BEES and QUEENS in 2 and 3-lb. packages; 1 2-lb. package with select untested queen, $5; 25 or more, $4.50; 1-3 lb. package with select untested Italian queen, $6.25; 25 or more, $5.75. Ten per cent with order, balance 10 days before shipment; 1,000 colonies to draw from. Can deliver the goods on time. Safe arrival and satisfaction guaranteed..
T. W. Burleson, Waxahachie, Texas.

"SHE SUITS ME."—Watch for my advertisement in the January, 1922, issue.
Allen Latham, Norwichtown, Conn.

BLUE RIBBON QUEENS—Carniolans and Italians. Order now for early spring delivery. Geo. W. Coltrin & Son, Mathis, Tex.

WHEN they say they have better, we know different. We defy the world to beat our new method. We are not boasting of selling thousands. We expect to furnish you all you want, if that is 30,000. Untested, $1; tested, $2. F M. Russell, Roxbury, Ohio.

FOR SALE—At pre-war prices, very best Italian queens and bees. Give us a trial; 700 colonies to fill your orders with.
Rosedale Apiaries, Big Bend, La.
J. B. Marshall, H. P. LeBlanc, Props.

GOLDEN QUEENS, GOLDEN—1922 price: untested, one, $1.25; doz., $12. Select untested, one, $1.50; doz., $15; tested, one, $2.50, doz., $27.50. Pure mating and safe arrival guaranteed in United States and Canada. Booking orders now.
Tillery Bros., Georgiana, Ala.

FOR SALE—Three-banded Italian queens. Write for prices. W. T. Perdue & Sons,
Rt. 1, Fort Deposit, Ala.

FOR SALE—My 1922 bees and queens, the big yellow kind; none better. They must satisfy or money will be refunded. Write for my special prices.
E. F. Day, Honoraville, Ala.

AM NOW BOOKING ORDERS for 2-pound packages of 3-banded Italian bees with untested queens, $5.50 each package; 25 or more, $5.25 each. Terms one-fourth down. No disease, and perfect satisfaction guaranteed..
J. J. Scott, Crowville, La.

FOR SALE—Early package bees, nuclei and queens. Shipping season from March 1 to June 1. We handle 1,800 colonies. No disease. Loveitt Honey Co.,
602 N. 9th Ave., Phoenix, Ariz.

IT WILL PAY YOU to write for my 1922 circular and price list before placing order for those bees. R. V. Stearns, Brady, Texas.

BOOKING ORDERS for spring delivery. Queens, package bees and nuclei. The reliable A. I. Root strain. Golden and leather-color Italians. Virgins, 60c; untested, $1.50; select untested, $2; tested, $2.50; select tested, $3. Circular free. A. J. Pinard,
440 N. 6th St., San Jose, Calif.

THREE-BAND QUEENS, packages and nuclei, any size. Special orders solicited. Absolutely free from disease. Delivery as early as March 25. Special discount on May delivery if booked this month. Proposition to Farm Bureaus and County Agents. Write for prices and terms.
Tupelo Honey Co., Columbia, Ala.

FOR SALE—One-frame, two-frame, and three-frame nuclei, with queens, both untested and tested. Our nuclei are fine. Write for prices.
H. B. Murray, Liberty, N. C.

BEES by the pound for spring delivery in 1, 2 or 3-pound packages; also superior Italian and Carniolan queens from selected domestic and imported stock. Early order discount on orders booked now. Circular free.
J. E. Wing, 155 Schiele Ave., San Jose, Calif.

FOR SALE—Our famous Italian bees in packages, 2 and 3-lb. packages with queens for sale; they are as good for honey-gathering as any bees in the U. S. A.; they are as yellow and as gentle. Our bees have stood the test all through the U. S. A. and Canada; recommended far and wide. We are free from all brood disease. Our famous Root-Howe-Davis bees that have been bred and selected from a large number of yards, will please you. Try them. We give prices on request. Some of our Wisconsin customers have written that the packages received from us in May, 1921, gave 150 pounds of honey this year. Reference, Bank of Liberty, Liberty, N. C.
H. B. Murray, Liberty, N. C.

NUCLEI and Cypress hives for 1922 delivery—Three-frame black or hybrid bees, Italian queen, $5.00; 3-frame Italian bees and queen, $5.50; 3-frame black bees and queen, $4.00; 3 pounds black bees and Italian queen on comb of honey, $5.50. Cypress hives complete; 5 10-frame, $12. Full depth supers complete, five 10-frame, $7. Prices on other sizes upon request. I own the timber and manufacture the hives, with no middlemen involved. Book orders now, so you can name shipping date to suit yourself. One-third with order to guarantee acceptance. Reference: Toombs County Bank, Lyons, Ga. Good farm for sale cheap.; 660 acres. Terms to suit purchaser. Otto Diestel, Elza, Ga.

BEES in 2-pound packages, our specialty for 1922. Now booking orders See ad elsewhere for prices. Caney Valley Apiaries
J. D. Yancey, Mgr., Bay City, Texas.

QUEENS OF QUALITY for 1922—3-banded Italians only. After April 15, untested, $1.25; tested, $2. Satisfaction guaranteed.
P. M. Williams, Ft. Deposit, Ala.

WE are now booking orders for spring delivery of our queens and package bees. Write us for prices. Graydon Bros.,
Rt. 4, Greenville, Ala.

1922 PACKAGE BEES and QUEENS—Untested and day-old, in Thompson safety introducing cages. Discounts on early advance orders. James McKee, Riverside, Cal.

QUEENS, package bees and nuclei. Begin shipping March 15, 1922. Circulars free. Booking orders now.
Dr. White Bee Co., Sandia, Texas.

FOR SPRING DELIVERY, 1922—One vigorous Italian queen, one frame emerging brood, one pound bees. Price, complete, f. o. b. Bordelonville, $5. Additional frames of brood, each $1; additional pounds of bees, each $1. Queen introduced and laying enroute to you. Safe delivery and satisfaction guaranteed. No disease. Reference given. Orders booked one-fifth down, May delivery. Send for addresses of satisfied customers.
Jes Dalton, Bordelonville, La.

BEES—100 colonies for sale.
E. F. Atwater, Meridian, Idaho.

FOR SALE—400 stands clean bees, extracting equipment; good location; for eason write. The Oregon Apiary Co.,
Nyssa, Oregon.

HARDY ITALIAN QUEENS, $1 each.
W. G. Lauver, Middletown, Pa.

BEES AND QUEENS from my Carolina apiaries, progeny of my famous Porto Rican pedigreed breeding stock.
Elton Warner, Asheville, N. C.

BEES AND QUEENS from my New Jersey apiary. J. H. M. Cook,
1Atf 84 Cortland St., New York City.

FOR SALE—Leather colored Italian queens, tested, until June 1, $2.50; after, $2. Untested, $1.25; 12, $13. Root's goods at Root's prices. A. W. Yates,
15 Chapman St., Hartford, Conn.

BOOK YOUR ORDERS for QUEENS now—Goldens, $2; tested, $3; banded, $1.50; tested $2.50; six or more, 10 per cent less.
Clover Leaf Apiaries, Wahoo, Neb.

BEES BY THE POUND, ALSO QUEENS—Booking orders now. Free circular gives prices, etc. See larger ad elsewhere.
Nueces County Apiaries, Calallen, Texas,
E. B. Ault, Prop.

WE are now equipped to handle your early spring orders for package bees and queens, especially bred for the production of honey. Our queens are bred from the best stock obtainable, and will give satisfaction. Safe arrival guaranteed. Write for prices and terms.
Sarasota Bee Co., Sarasota, Fla.

## SWEET CLOVER SEED

FOR SALE—Hubam clover seed; genuine Hughes strain (scarified).
Jas. H. Kitchen, Rt. 5, Springfield, Ohio.

FOR SALE—A limited quantity of my crop of giant annual white sweet clover seed of the Hughes variety. This seed was all produced under cultivation. References and prices furnished upon application. All seed genuine, certified and scarified. Get your supply before I am all sold out. Edw. A. Winkler, Rt. 1, Joliet, Ill.

HUBAM CLOVER GUARANTEED — Start growing this plant immediately if you wish to make a success with bees. The wise beekeeper who gets a generous start of Hubam for 1922 is assured a good honey crop for next year and every year following. Hubam will make a good honey crop in dry climates where most plants fail.

If you haven't land of your own, plant all waste land in your locality.

The Hubam seed crop promises to be the best farm crop for 1922. In other words. there will be big money in the seed crop alone.

The price of seed is now $2 a pound.
Fred M. Schader, Sunnyside, Wash.

## HONEY AND BEESWAX

ATWATER HONEY—Supply your customers.

FOR SALE—White clover and goldenrod honey, put up in 10-lb. pails. Well ripened; mild flavor. Write for prices.
John Tyrell, Snover, Mich.

FINE LIGHT HONEY—Mountain mint and milkweed in new 60-lb. cans and cases, 13c lb.; also buckwheat-goldenrod honey in 60-lb. cans, 9c lb.; all f. o. b. here.
A. G. Hann, Glen Gardner, N. J.

EXTRA FINE white sweet clover honey. Case of two 5-gallon cans, 120 pounds, $17; one can, $9; five cases, $82. Sample 10c.
C. S. Engle, 1327 E. 23rd St., Sioux City, Ia.

FOR SALE—Finest alsike, alfalfa, sweet clover honey in 60-lb. cans.
R. Selwyn Wilson Buhl, Idaho.

FOR SALE—Buckwheat honey in 60-lb. cans, one can to case, liquefied $6; 2 cans to case, granulated, $10.80.
John J. Lewis, Lyons, N. Y.

FOR SALE—Extra fancy clover honey, well ripened and put up in new cans,60 lbs. net, per case of two cans, $15 60.
Edw. A. Winkler, Rt. 1, Joliet, Ill.

FOR SALE—Highest grade honey in 60-lb. cans, 2 in case, at 12c per lb.; amber honey at 10c per lb. Julius Gentz, Wabeno, Wis.

HONEY FOR SALE—In 60-lb. tins, water white orange, 14c; water white clover or white sage, 13c; extra light amber sage, 11c; New York State buckwheat, 10c, for immediate shipment from New York.
Hoffman & Hauck, Inc., Woodhaven, N. Y.

CLA-FO-NY quality buckwheat honey (liquid or crystallized), 5-lb. pails, 65c each, 15 to case. Clarence Foote, Delanson, N. Y.

FOR SALE—Amber honey in 5-lb. pails, 12 to case, $8.50 here. Sample pail $1. Money back if not satisfied.
Luehrsen, 8243 Avalon Ave., Chicago, Ill.

FOR SALE — White and amber extracted honey; also comb honey. Write for prices. State quantity wanted.
Dadant & Sons, Hamilton, Illinois.

HONEY—SUPPLY YOUR CUSTOMERS—Finest alfalfa-clover honey, extra strong cases, case of two 5-gal. cans, $12; case of six 10-lb. pails, $7.20; case of twelve 5-lb. pails, $7.80, all f. o. b. here.
E. F. Atwater, Meridian, Idaho.

FOR SALE—No. 1 white comb, $6 per case; No. 2 white comb, $5 per case of 24 sections; six cases to carrier. Clover extracted, in two 60-lb. cans to case, 15c per pound; 5-lb. pails, $1 each, 12 to case. Amber baking honey, two sixty-lb. cans to case, 10c per pound; same honey in 50-gallon barrels, 8c.
H. G. Quirin, Bellevue, Ohio.

FOR SALE—Extra choice extracted white clover honey, put up in 60-lb. cans and 5-lb. lithographed pails. Sample 20c, same to apply on first order.
E. J. Stahlman, Grover Hill, Ohio.

FOR SALE—Finest Michigan raspberry, basswood and clover No. 2 white comb, $5.50 per case; No. 1, $6; fancy, $6.50; extra fancy, $7, 24 Danz. sections to case. Extracted, 60-lb. cans 15c per lb. W. A. Latshaw, Clarion, Mich.

FOR SALE—Extracted honey. Write for prices. A. L. Kildow, Putnam, Ill.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendering. Fred W. Muth Co.,
204 Walnut St., Cincinnati, Ohio.

HONEY WANTED—Give particulars in first letter. Elton Warner, Asheville. N. C.

## SUPPLIES

ATWATER HONEY—Supply your customers.

FOR SALE—Standard 10-frame hives with reversible bottoms, metal covers and inner covers; without frames, $3 each. Bodies $1.25 each. Give me a trial order.
Thomas Cordner, Sparta, Wis.

FOR SALE—Western beehives, standard sizes, manufactured from red cedar and white pine; odd sizes made to order. Williams Bros.,
5125 82nd St., S. E. Portland, Ore.

BEEKEEPERS — Reversible cypress bottom-boards, perfectly milled, 5 or more, 70c each.
J. B. Sanderson, Manufacturer of Beeware,
Fredericksburg, Ohio.

WESTERN BEEKEEPERS—We can demonstrate that you can save money on buying bee supplies of best quality. Write for our latest price list.
The Colorado Honey Producers' Association,
Denver, Colo.

HAVE YOU any Bee Journals or bee books published previous to 1900 you wish to dispose of? If so send us a list.
American Bee Journal, Hamilton, Ill.

### MISCELLANEOUS GOODS

We list below numerous goods, very slightly shopworn, or odd stock, at prices which will save you money:

13 wiring boards for Langstroth brood frames, Hoffman size, ..............................$1.00 each
1 transformer for 60-cycle 110-volt current, $2.50
9 10-frame Tri-State honey boards.... 25c each
145 fiber mats for 10-frame hives ........30c each
2 8-frame moving screens for entrances of hives ............................................ 25c each
5 10-frame moving screens for entrance hives 25c each

### HIVES AND PARTS

4 crates of 5 1-story 8 -frame tri-state hives with frames ........................ $14.28 per crate
1 crate of 5 1-story 10-frame tri-state hives, with frames ........................ $15.70 per crate
5 crates of 5 No. 1 8-frame tri-state supers, $4.15 per crate
10 crates of 5 No. 1 10-frame tri-state supers $4.55 per crate
3 crates of 5 8-frame tri-state supers, with 5⅜ frames ........................................ $4.10 per crate
5 crates of 5 10-frame tri-state supers, with 5⅜ frames ................................ $4.55 per crate
3 crates of 5 No. 2 10-frame dovetailed supers $5.65 per crate
3 crates of 5 10-frame dovetailed supers, with 5⅜ frames ........................................ $4.55 per crate
23 crates of 5 8-frame 1-story dovetailed hives, with frames ........................ $11.90 per crate
1 crate of 5 10-frame dovetailed supers, 16¼ wide, for 4¼x4¼x1½ sections, $4.60 per crate
1 crate of 5 No. 3 10-frame dovetailed supers $5.05 per crate

BOTTOMS AND COVERS

| | |
|---|---|
| 1 crate of 5 10-frame dovetailed bottoms, | $3.30 per crate |
| 29 crates of 5 8-frame Excelsior covers | $3.12 per crate |
| 17 crates of 5 8-frame ventilated gable covers, | $3.20 per crate |
| 1 crate of 5 8-frame dovetailed flat wood covers with inners | $3.20 per crate |
| 8 crates of 5 8-frame Colo. covers, with inners | $6.00 per crate |
| 11 crates of 5 10-frame Colo. covers, with inners | $7.00 per crate |
| 5 crates of 5 10-frame double wood covers with inners | $3.30 per crate |
| 6 crates of 5 10-frame ventilated gable covers | $3.30 per crate |

SECTIONS

| | |
|---|---|
| 30 crates of 500 4¼x1¾ 2 side sections, | $5.50 per crate |
| 8 crates of 500 4¼x1 15-16 2 side sections | $5.50 per crate |
| 6 crates of 500 4¼x2 2 side sections | $5.50 per crate |
| 7 crates of 500 4x5x1⅝ plain sections | $5.00 per crate |
| 3 crates of 500 4x5x1⅜ plain sections, split | $5.00 per crate |
| 400 5¼x6¼x1⅞ sections, 2 side, all for | $3.50 for lot |

SHIPPING CASES

| | |
|---|---|
| 5 crates of 50 single tier shipping cases for 24 4¼x2 sections | $25 per crate |
| 4 crates of 25 safety cases for 24 4¼x1½ sections | $12.25 per crate |
| 10 crates of 25 shipping cases, safety, for 24 4¼x1⅞ sections | $11.75 per crate |
| 1 crate of 10 2-tier cases for 24 4¼x1½ sections | $5.30 per crate |
| 4 crates of 25 cases for 12 4x5x1⅜ sections | $7.00 per crate |
| 2 crates of 10 cases for 12 4¼x1½ sections | $3.00 per crate |

EXTRACTORS, HONEY AND WAX

| | |
|---|---|
| 3 No. 10 extractors, never used, fine condition | $30.00 each |
| 1 No. 15 extractor, never used, fine condition | $32.00 |
| 1 Emerson 4-frame reversible, fine condition | $60.00 |

HONEY PACKAGES AND SIGNS

| | |
|---|---|
| 60 cases of 2 60-lb. cans, new cans, used cases, | $1.15 per case |
| 15 cases 24 6-oz. glasses | 75c per case |
| 3 cases 24 12-oz. jars | $1.25 per case |
| 1 honey sign, 25x25 in., slight bend | $2.00 |

Send us your order by return mail.

DADANT & SONS,
Hamilton, Illinois.

## FOR SALE

ATWATER HONEY—Supply your customers.

FOR SALE — Apiary; orchard and poultry range, established 32 years ago; home trade for honey, with 75 colonies of bees, fixtures and cellar for 200 colonies; 7-room house, close to the factory district. Write for particulars.
C. F. Lang, La Crosse, Wis.

FOR SALE—Three-banded Italian queens, $1 each.
Alabama Bee Co.,
Rt. 1, Fort Deposit, Ala.

FOR SALE—Good 8-room dwelling, 2½ acres land, all kinds fruits, about 40 colonies bees; 1 mile of town. Price $4,500. Also bargains in 160 acres A-1 land under irrigation; good bee range unoccupied. Special payment plan.
S. J. Harris, Olathe, Colo.

FOR SALE—500 colonies bees and all needed equipment and supplies for good business; ten outyards; fine locations; alfalfa, sweet clover. C. E. Dibble, Payette, Idaho.

FOR SALE—About 300 hives of Italian bees in 8 and 10-frame hives together with full equipment, all located 6 miles south of Nampa, Idaho, in good district. No disease.
Elton S. Stinson,
New Brunswick, N. J., care Woodlawn.

FOR SALE—Good second-hand 60-lb cans, two cans to a case, boxed, at 60c per case f. o. b. Cincinnati. Terms cash.
C. H. W. Weber & Co., 2163 Central Ave,
Cincinnati, Ohio.

FOR SALE—"Superior" Foundation (Weed process). Quality and service unexcelled.
Superior Honey Co., Ogden, Utah.

## WANTED

ATWATER HONEY—Supply your customers.

BEES WANTED—One hundred nuclei or packages; no middle man.
C. E. Baines, 136 Lappin Ave., Toronto, Can.

HONEY WANTED—Comb or extracted Spanish needle, basswood or white clover. Send sample and state price, delivered. Will trade Hershiser wax press for honey.
H. M. Showers, Mystic, Iowa.

WANTED—High grade extracted honey; must be clean and good cans and cases. Quote price. Merton Church, Highland Park, Ill.

WANTED—Comb and extracted honey. State lowest price delivered to Marshfield, and send sample of extracted honey.
The Henseler Apiaries, Marshfield, Wis.

WANTED—Clover honey for bottling purposes; must be finest quality honey, very light in color and not mixed with basswood. Write, stating what you have and lowest price.
Longfellow Bros., Hallowell, Maine.

WANTED—Comb honey. Description and price first letter; also extracted honey; bees.
Frank Coyle, Penfield, Ill.

WANTED—Our own fall crop having been a partial failure, we could use limited quantities of heartsease and Spanish needle honey. Send sample when offering and give price you expect and how put up in first letter.
Dadant & Sons, Hamilton, Illinois.

WANTED—Honey, section, bulk comb and extracted. W. A. Hunter, Terre Haute, Ind.

WE BUY honey and beeswax. Give us your best price, delivered in New York. On comb honey, state quantity, quality, size and weight of sections and number of sections to a case. Extracted honey, quantity, quality, how packed, and send samples.
Charles Israel Bros. Co.,
486-490 Canal St., New York City.

WANTED—Beeswax, old combs and cappings for rendering on shares. Also wax accepted for trade. Top market prices offered.
A. I. Root Co., Council Bluffs, Iowa.

WANTED—Your order for "Superior" Foundation. Prompt shipments at right prices.
Superior Honey Co., Ogden, Utah.

WANTED—We have many calls from educators for copies to complete their files of the older Bee Journals. If you have complete volumes or miscellaneous numbers of any Bee Journals previous to 1900, write us, giving a list, and we will be glad to quote a price. Old bee books, now out of print, are also desirable. We act as a clearing house for this kind of materials.
American Bee Journal, Hamilton, Ill.

## MISCELLANEOUS

ATWATER HONEY—Supply your customers.

GRANULATED HONEY SLIPS—60,000 sold this summer. They save talk and trouble. The public is learning. They say: "All Pure Honey will Granulate. * * *" and so on. They say just enough. One thousand for $1.50; less number 23 cents the 100. Postage and insurance paid.
Dr. Bonney, Buck Grove, Iowa.

A BEEKEEPER, Christian home, wishes to correspond with middle-aged country Protestant, kind Christian woman.
5G, American Bee Journal.

LEAGUE EMBLEMS—We still have a number of U. S. Beekeepers' emblems, buttons or pins, bronze or gold. Send 50 cents and get one
American Bee Journal, Hamilton, Ill.

## SITUATIONS

ATWATER HONEY—Supply your customers.

WANTED—Position—Young man, 20, wants position with commercial beekeeper for season of 1922; 3 years' experience in beekeeping on small scale. References furnished.
Jos. C. Allen, Alpine, Ala.

**Money and Satisfaction for You**

Save one profit by buying direct from factory. Standard, Jumbo and Modified Dadant Hives in stock.

*Write for catalog*

*Wanted to buy Comb and Extracted Honey*

Address

**A. E. Burdick, Sunnyside, Wash.**

**Southern Headquarters**

**Package Bees. Reliable Queens.**

**Three-Banded Italian Only**

We solicit your orders for 1922 shipping. We have the stock, equipment and experience necessary to give you prompt, satisfactory service. We have more than 1,000 big, healthy, hustling colonies of pure Italian bees to draw from. Write for our illustrated price list.

**W. D. ACHORD, Fitzpatrick, Ala.**

**NUCLEI OUR SPECIALTY—PACKAGE BEES**

THREE BANDED ITALIAN QUEENS

Our BEES and our EXPERIENCE will give you prompt and satisfactory service.

One 2-frame nuclei, no queen, $4; 25 or more, $3.75; 50 or more $3.50; 100 or more, $3.25.

One 3-frame nuclei, no queen, $6; 25 or more, $5.25; 50 or more $5; 100 or more, $4.75.

Queens: One untested, $1.50; 6, $8; 12, $15; 50, $60; 100, $100.
Tested queens, $2.50 each.

Package bees, same prices as nuclei. Write for early order discounts from above prices and our guarantee on shipments. We will surprise you.

**COTTON BELT APIARIES, Roxton, Texas**

FOR YOUR 1921 CROP

Comb honey shipping cases, honey cans, friction top pails. Prices on application.

Early order cash discount on sections, hives, supers, frames, comb foundation and other goods.

Buy now and get supplies ready for 1922. Make out your list and send for our prices.

**AUGUST LOTZ COMPANY, Boyd, Wisconsin**

IT'S HERE! WE HAVE IT!

QUALITY BEE SUPPLIES

POLISHED SHIPPING CASES

One-piece covers and bottoms, glass and paper included, selling at cost prices, as follows:

24-lb., for 1⅞ sections, ---------- $30 per 100
12-lb., for 1⅞ sections ---------- $17 per 100

Write for illustrated catalog on our bee supplies. We are always ready to serve you.

**CHAS. MONDENG**
146 Newton Ave. N. and 159 Cedar Lake Rd. Minneapolis, Minn.

BEE SUPPLIES

We are prepared to give you value for your money. Our factory is well equipped with the best machinery to manufacture the very A-best supplies that money can buy. Only the choicest material suitable for bee hives is used. Our workmanship is the very best. Get our prices and save money.

Eggers Bee Supply Mfg. Co.
Incorporated
510 WATER ST., EAU CLAIRE, WIS.

WESTERN BEEKEEPERS!

We handle the finest line of bee supplies. Send for our 68-page catalog. Our prices will interest you.

**The Colorado Honey Producers' Association, 1424 Market St., Denver, Colo.**

5 — Good — $1 Magazines

Woman's World, (Monthly)
Good Stories, (Monthly)
American Woman, (Monthly)
Mother's Magazine, (Monthly)
The Farm Journal, (Monthly)

Our Price $1.00 ALL FIVE FOR 1 YEAR

ORDER BY CLUB NUMBER 180

A Dollar Bill will do—We take the risk

*Send all orders to*

**Whitlock & Summerhays**
25 North Dearborn Street, CHICAGO

HUBAM, OR WHITE ANNUAL SWEET CLOVER

Pay your debts by growing Hubam while the seed is scarce. Contract for your seed now. Every beekeeper should grow Hubam. The best paying crop today on the farm.

**E. G. LEWIS SEED CO.,**
**Media, Ill., U. S. A.**

POULTRY
TRIBUNE

America's Leading Poultry Paper
Showing Champions in all Breeds.

4 MONTH'S TRIAL SUBSCRIPTION 25c

U. S. Stamps accepted Practical articles by formost poultrymen. 80pp; 1 year $1.00; 3 years $2.00.
Poultry Tribune Dept.6, Mt. Morris, Ill.

EVERY STEP IN BEEKEEPING

By Benjamin Wallace Douglass

A brand-new book based on the most up-to-date scientific information and thorough practical experience that tells how to keep bees for profit.

A book of directions, every step made clear, so that the beginner may start right and go forward without floundering. Delightfully written. Author was formerly State Entomologist of Indiana and has been a successful beekeeper for years.

Illustrated with thirty-one photographs. Price $2.50. Sent postpaid on approval to any subscriber if the name of this magazine is mentioned.

THE BOBBS-MERRILL CO.
University Plaza, Indianapolis, Indiana.

## MR. BEEKEEPER—

We have a large plant especially equipped to manufacture the supplies that you use. We guarantee all materials and workmanship. We ship anywhere. We allow early order discounts and make prompt shipments. *Write for free illustrated catalog today*

**LEAHY MFG. CO., 90 Sixth Street, Higginsville, Missouri**

**J. W. ROUSE, Mexico, Missouri** **A. M. HUNT, Goldthwaite, Texas**

## Annual White Sweet Clover Seed

**(James or Alabama Strain)**

Start right. Buy your seed from the home of this New Plant.

This clover was discovered growing in Alabama by our Mr. James, in 1919.

Our crop this year was harvested without rain, and we can furnish a very high grade of seed, absolutely pure, grown by us on cultivated lands.

We are offering a limited supply at $2 per pound, delivered. This will be clean, hulled, scarified seed. Germination test must please you. Write for further information as to how to grow, etc.

**F. A. James Clover Seed Co**

**Newbern, Alabama**

## HONEY

FINEST Michigan Raspberry Basswood and Clover comb and extracted honey.

| | |
|---|---|
| Crate 8 cases 24 sec. Ex. Fancy | $44.00 |
| Crate 8 cases 24 sec. Fancy comb | 40.00 |
| Crate 8 cases 24 sec. A No. 1 co'b | 36 00 |
| Crate 12 pails, 5-lb., extracted | 10.80 |
| Crate 6 pails, 10-lb., extracted | 10.20 |
| Crate 2 cans, 60-lb., extracted | 14.40 |

*Send Today for Free Sample*

**W. A. LATSHAW COMPANY, Clarion, Michigan.**

## BEE SUPPLIES

We carry a complete stock of supplies at all times, and can make prompt shipments. Our prices will interest you.

**Send Us Your Inquiries**

**A. H. RUSCH & SON CO.**

**Reedsville, Wis.**

## Shrubs and Trees

That provide Nectar for the Bees and Fruit for the household. No Cash with order. Get our Catalog TODAY.

**PROGRESS NURSERIES**

**1318 Peters Ave. Troy, Ohio**

## 1922 PRICES

PACKAGE BEES, with select 3-banded Italian Queens, delivered to your address via parcel post, postage paid by me.

PRICES:

| | |
|---|---|
| 1-pound package with young Italian queen | $4.50 |
| 2-pound package with young Italian queen | 6.00 |
| 3-pound package with young Italian queen | 7.50 |

25 cents per package less for twelve or more packages.

The high quality of my queens, combined with prompt service and reliability, justifies the above prices. Let me book your order now, with 10 per cent cash, balance just before shipping. Will send bees and queens on the day you name. Pure mating of queens, safe arrival, and satisfaction guaranteed.

**JASPER KNIGHT, Hayneville, Ala.**

## THREE-BANDED ITALIANS

**BOOKING ORDERS NOW FOR 1922. QUEENS READY APRIL 1.**

Will book orders for one-fourth cash, balance before delivery. Will guarantee safe arrival in the United States and Canada.

**Prices for April, May and June:**

| | | |
|---|---|---|
| Untested | $1.25 each; | 25 or more, $1.00 each |
| Select Untested | $1.50 each; | 25 or more $1.25 each |
| Tested | $2.50 each; | 24 or more $2.25 each |

Select tested $3 each. Circular free.

**JOHN G. MILLER, Corpus, Christi, Texas**

**723 C STREET**

# ALUMINUM HONEYCOMBS

This modern apiary appliance is being used by beekeepers in many states and countries

Buy these combs from your regular dealer. Any bee supply dealers can furnish them. They are now carried in stock by the following:

IN THE EAST:

G. B. Lewis Company, Albany, N. Y.
Fred W. Muth Co., Cincinnati, Ohio.
G. B. Lewis Co., Lynchburg, Va.

IN THE NORTH:

Dadant & Sons, Hamilton, Ill.
A. G. Woodman Co., Grand Rapids, Mich.
G. B. Lewis Co., Watertown, Wis.
Standard Lumber Co., Winona, Minn.

IN THE WEST:

Chas. H. Lilly's Co., Seattle, Wash and Branches.
Western Honey Producers, Sioux City, Iowa.
Colorado Honey Producers' Association, Denver, Colo.
B. F. Smith, Jr., Fromberg, Mont.
G. B. Lewis, Co., Wichita, Kans.

IN THE SOUTH:

J. J. Wilder, Waycross, Ga.
G. B. Lewis Co., Memphis, Tenn.
Texas Honey Producers' Association, San Antonio, Texas.

**LOWER PRICES**

For the season of 1922 the prices on Aluminum Honeycombs are greatly reduced.

| | |
|---|---|
| Modified Dadant or Jumbo frames | 60c each |
| Langstroth or Hoffman frames | 50c each |
| Shallow extracting, any style | 45c each |

The above prices are f. o. b. factory or dealer's stock. Write to your dealer for quantity discounts on orders of 500 combs or over.

Be sure to buy the combs manufactured in Texas by

**THE ALUMINUM HONEYCOMB CO. OF TEXAS**
**SAN ANTONIO, TEXAS**

**BEE SUPPLIED NOW**

*Root Quality, New Prices, Wholesale Discounts*

Airco Fdn. 25 to 50 Lb. Lots ............ 68c
Root 10 fr. Metal Cover, crate of five .. $18.00
Std. Hoff- Frs., per hundred ............ $ 6.72
Root 10 Fr. Excel. cover crate of five .. 15.00
16 Oz. Jars, 24 to case ............ $1.45

*Direct or Factory Shipment—Save you Carrying Charges. Prompt Service, Satisfaction Guaranteed*

**BOX 585 THE SOUTHLAND APIARIES, Hattiesburg, Miss.**

# NUCLEI FOR SALE—1922 PRICES

Remember that in buying our nuclei you are not only getting two pounds of bees, but three frames of brood, which, when hatched, will double the size of the colony.

Note what these large beekeepers say: "I have no hesitation in recommending you as to your ability to put up bees for shipment, or as to your business integrity. Of the 225 nuclei sent to date, every one came through alive and in fine condition."—R. F. Holtermann, Ontario, Canada.

"Nuclei arrived in fine shape; made 100 lbs. clover honey each. Book me for 100 next spring."—G. F. Saunders, Hornby, Ontario, Canada.

H. J. Eisaman, of East Springfield, Pa., states: "While visiting in Mr. R. F. Holtermann's part of the country this fall, I noted the splendid showing your bees had made. Book me for 30 nuclei for May 1."

PRICE LIST OF OUR GOODS

| | |
|---|---|
| 3-frame nuclei Italian bees with Italian queen | $5.50 each |
| 3-frame nuclei hybrid bees, with guaranteed pure Ital. queen, | $5 each |
| 3-frame nuclei black bees, with black queen | $4.00 each |
| 4-frame nuclei black bees (without queens), fine for building up weak colonies | $4.00 each |
| Cypress hives, complete, crate of 5 | $12.00 |
| Medium brood foundation at 65c per pound. | |

Terms: One-fourth down to guarantee acceptance. Safe arrival and satisfaction guaranteed. Certificate of inspection will accompany each shipment. Will start shipping April 10, 1922.

**A. R. IRISH, Ludowici, Ga.**

**QUEENS** **PACKAGE BEES AND NUCLEI** **QUEENS**

Have a special offer to Beekeepers Associations or groups of Beekeepers that can use a car of bees at a time 800 to 1000 packages. We are prepared to load two cars a week after April 5th, 1922. Free ticket to the party coming down to go back with the car or I can furnish a man. This is the best way, no transferring from one car to another, bees go through in 3 to 4 days.

Also special attention given to small orders.

1922 prices. Booking orders now. Safe arrival guaranteed.

1-lb. package $2.25 each, 25 or more $2.15 each.
3-lb. package $5.25 each, 25 or more $5.00 each.
2-lb. package $3.75 each, 25 or more $3.60 each.
2-comb nuclei $3.75 each, 3-comb nuclei $5.25 each.

Add price of queen wanted.

1 untested queen $1.50 each, 25 or more $1.30 each
1 select, untested $1.70 each, 25 or more $1.50 each.
1 tested $2.25 each, 25 or more $2.00 each.
1 select tested, $2.65 each, 25 or more $2.25 each.

One-fifth down with order, balance just before shipping, or 4 per cent discount for full remittance for December, 3 per cent for January orders.

E. B. Ault, Prop. **NEUCES COUNTY APIARIES, Calallen, Tex.**

*Write for our red catalog with reduced price sheet*

*Reductions are from 10% to 35% off our spring and summer prices*

Let us make your beeswax into foundation **now,** so you will have it ready early in the spring

We also render wax from old combs and slum gum

*SEND US A LIST OF YOUR REQUIREMENTS IN BEE SUPPLIES*

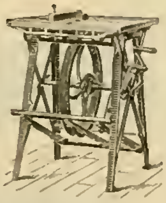
We sell the best possible goods at the lowest possible prices

**W. T. FALCONER MFG. COMPANY, Falconer, (NEAR JAMESTOWN) N. Y., U. S. A.**

*"Where the BEST Beehives come from"*

**BARNES' FOOTPOWER MACHINERY**

Read what J. E. Parent, of Chariton, N. Y says: "We cut with one of your Combined Machines last winter 50 chaff hives with 7-in. cap, 100 honey-racks, 500 frames and a great deal of other work."



**W. F. & JOHN BARNES**
995 Ruby St., ROCKFORD, ILLINOIS

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QUALITY QUALITY

**QUEENS** BEES BY THE POUND FOR 1922 **QUEENS**

You who have tried our bees and queens know their good qualities. Those who have not tested them we suggest their giving us a trial order. Our thousands of satisfied customers testify to their superior traits. We are now booking orders for 1922 delivery, 10 per cent cash with order. No disease, safe arrival and satisfaction guaranteed.

PACKAGES BY EXPRESS

1-lb. packages, with queens, $4.00 each; 12 or more, $3.75 each.
2-lb. packages, with queens, $5.50 each; 12 or more, $5.00 each.
3-lb. packages, with queens $7.25 each; 12 or more, $6.75 each.
By parcel post 10 per cent extra on above.
1½-lb. package, Canadian Special, with queens, by mail, $5.00 each.
Select untested queens, $1.50 each; 12 or more, $1.40 each.
Select tested queens, $3.00 each; 12 or more, $2.75 each.

We do not guarantee safe arrival of bees going to Canada by express. The largest sized packages we can ship by mail to Canada are the 1½-lb. size, as per above.

**M. C. BERRY & CO.**
**HAYNEVILLE, ALA., U. S. A.**

An Acceptable Christmas Gift

**OUR BACKDOOR NEIGHBORS**
BY FRANK C. PELLETT

A book of stories of common wild creatures which never fails to please the children as well as the grown-ups. These stories are the kind that one loves to read again and again.

**Price $1.50 postpaid.**

**AMERICAN BEE JOURNAL, Hamilton, Ill.**

**BEEKEEPERS** WE MANUFACTURE DOVETAILED HIVES, HOFFMAN FRAMES, SECTIONS AND SHIPPING CASES

Our hives are made of best grade White Pine, cut accurate and smooth to standard measure. Sections are made of Basswood polished on both sides. There are no better made.

We carry a complete line of everything used in the apiary. Our shipping facilities are as good as can be found anywhere. We want your business. We guarantee prompt and satisfactory service. Price list free.

**MARSHFIELD MANUFACTURING COMPANY, Marshfield, Wis.**

**PACKAGE BEES FOR 1922**

We Specialize on Three-band Italians Bred for Business.

A 2-pound package of our hustlers with a select untested queen for $5; 25 or more, $4.75 each. Special prices on large lots. One-fifth cash books your order. Order early and make sure of shipping date. We do not accept more orders than we can fill promptly.

**CANEY VALLEY APIARIES, Bay City, Texas**
**J. D. YANCEY, Mgr.**

QUALITY
TIN CANS
FIRST
For PACKERS and MANUFACTURERS of FOOD PRODUCTS
LARGE CAPACITY
LONG EXPERIENCE
YOUR INQUIRIES SOLICITED
W. W. BOYER & CO. INC.
BALTIMORE, MD.

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First Lessons in Beekeeping, by C. P. Dadant. 167 pages, 178 illustrations. Cloth $1.
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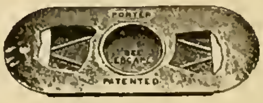
**HAMILTON, ILL.**

**PORTER** BEE ESCAPE SAVES HONEY TIME MONEY



For sale by all dealers
If no dealer, write factory
**R. & E. C. PORTER, MFRS.**
**Lewistown, Illinois, U. S. A.**
(Please mention Am. Bee Journal when writing)

# Crop and Market Report

Compiled by M. G. Dadant

## CROP AND MARKET REPORT

Belated reports coming in from beekeepers would indicate that the total honey crop will be considerably in excess of our report for last month. This is mostly due to the favorable weather in the fall months, which resulted in a much better fall crop than was expected. This larger fall crop also came in regions which are not generally to be considered as fall crop regions. Michigan and Wisconsin have had very good fall crops, whereas, the Mississippi and Illinois River bottoms, which generally have an abundant fall flow, fell very much under the average for the past five years, and even below the 1920 crop.

A report just received from the Bureau of Crop Estimates at Washington, gives the per colony average of honey for the United States for 1921 as 44 pounds, compared to 59 pounds in 1920, and a five-year average of 43 pounds. Some of the short crop States are California, with an average of 23 pounds as against 93 pounds in 1920; Nevada, with 25 pounds instead of 83; Arizona, with 42 pounds instead of 92; Wisconsin with 42 pounds instead of 85, and North Carolina with 10 pounds instead of 55.

Those States producing a considerably larger crop than in 1920 are Maine, Georgia, Florida, Ohio, Michigan and Mississippi

A peculiar condition existed in Utah. Castle Valley produced its normal crop of approximately seven cars, while the Uintah Basin, generally a large producer, shipped very little honey.

Latest reports from Texas would indicate that the final 1921 crop for the whole State will be slightly in excess of 1920. Earlier reports of a short crop for California are verified.

## THE HONEY MARKET

Very probably the excessive demand during October for carload lots of honey has not held up proportionately during November, though still much in excess of the demand for the same time last year. There is still a very active demand, however, for good grades of white honey. The consumer is buying. Low sugar prices, while interfering with sales of amber honey, seem to have had no effect on the white honey trade. In fact, all reports, from wholesalers, retailers and beekeepers alike, would indicate that the consuming public seem to have been brought to a realization of the value and desirability of white honey as a good product. Whereas, the cheaper syrups are a drug on the market, honey is moving well.

This applies, naturally, to those markets which demand the white honey. In the markets where amber honey is sold, the competition of the cheaper imported amber honeys and of sugar is still being felt, though indications are for a gradual improvement.

Many reports from beekeepers, both large and small, are to the effect that the demand is excellent; that they will be unable to supply their regular demand from their own stocks, but will have to buy elsewhere or let the customers go.

This is the opportunity to keep up the supply, encourage the demand and clean up the supplies of honey in good shape for the 1922 season. Many have argued, formerly, that in the honey business it was not over supply, nor lack of demand, but lack of proper distribution, and we are inclined to agree. All too true it is, that every demand should be supplied, either by the handling of outside honey by the beekeeper, or referring such an unfilled demand to parties who can take care of it.

## HONEY PRICES

There has not been much change in the retail prices of honey, and what there has been has been upwards. Most of the now small class who do not know market prices have disposed of their crop at unreasonably low prices, and the tendency is towards a stabilization. The jobbing market for amber honey has not seen much change, but white honey has slightly stiffened, though white sweet clover extracted is still offered at about 8½ cents to 9 cents f. o. b. shipping point, which would make a minimum New York price of around 9½ cents for white.

The Southeast, which has complained all along of the slowness of the market and the great damage done native honey by the imported product, is in a little better shape, and the demand is becoming some better.

All in all, we would imagine that the honey situation is far from hopeless and that the large demand and large shipments should, before spring, lead to a favorable condition in the honey supply and honey price.

Let us hope, however, that such favorable signs as there may be will not tend to make for a slackening effort in selling, or tend to boost prices on the part of the handler beyond what is reasonable and just.

## RETAIL PRICES

The above prices refer to car lots. Freights, commissions, packing and handling bring the price up to double these figures before the honey reaches the consumer. In most localities white honey is retailing at from 20 to 30 cents per pound in 5 and 10-pound pails. In glass further costs are added. The beekeeper who retails his own crop should not overlook the fact that the packing and selling of his product is a different proposition from producing, and should profit by the selling as well as the production of his crop.

**SUPERIOR FOUNDATION**

While the hum of the bees grows fainter, the hum of our machinery grows stronger, preparing for another enormous spring demand for Superior Weed Process Foundation

*When buying secure the best*

Manufactured by **SUPERIOR HONEY CO., Ogden, Utah**

**If you want the cheapest, buy the best. I am offering to the trade of 1922 Nuclei, Nuclei and more Nuclei**

Let me prove to you that one of my 3-frame nuclei is worth more to you than a 2 or 3 pound package; besides, they cost you less.

1st. One of my 3-frame nuclei is equal to a swarm of bees, as you get young bees and brood in all stages, and the queen laying enroute.

2nd. There is no trouble about transferring them, and the bees are fresh and not worn out from fretting as they are in pound packages.

3rd. The purchaser has an absolute guarantee that they will arrive in good condition.

4th. The three combs, if empty, are worth more than the difference in the price of freight. Last season I shipped over eighteen hundred nuclei, with a loss of only two. Can the pound package shipper give such a record?

Read what one of my customers says: St. Thomas, Virgin Islands, U. S. A., June 21, 1921. Mr. A. B. Marchant, Jesup, Ga. Dear Sir: "The four three-frame nuclei arrived today in perfect order, only stores were gone, and they could not have lasted a day longer, as they were on the road 28 days." Sincerely yours, Axel Holst. The above settles the question as to safe arrival.

Now a few words about my frames and combs. My frames are genuine Hoffman wired, with shoulders cut at each end of the end bars, which makes them fit square and even.

My combs are drawn from full sheets of the famous Dadant foundation. There is none so good.

My shipping facilities are the best, having twenty or more express trains every twenty-four hours. Some of them going to New York and other points without a change.

Prices of my 3-frame nuclei, with a select untested queen, $5.50 each. Ten per cent cash with order to show good faith, balance any time before shipping.

Should a customer become dissatisfied and we cannot adjust the matter, then send your claim to the A. B. J. and I will abide by whatever they do.

My bees are all bright 3-banded Italians. A great many breeders call them goldens.

To those that have weak colonies and wish to build them up, I can furnish nuclei without queens from fifteen to twenty days earlier, price, $5 each.

I can also furnish full colonies in 8 and 10-frame hives; prices quoted on application. Shipping season depends on the weather, usually begins April 15th.

I can load a car in 48 hours, as I have over 1,000 colonies to draw from.

**My Guarantee:** Safe arrival in U. S. and Canada, free from disease, pure stock of Italians, quick and prompt service, and a satisfied customer.

THE NUCLEI MAN. Reference: THE BRUNSWICK BANK & TRUST CO., Jesup, Ga.

**A. B. MARCHANT, Jesup, Georgia**

**PATTERSON & WINTERS**

**QUEENS**

**Early Order Discounts for 1922 on Queens and Package Bees**

Orders received during November, 1921--10%
Orders received during December, 1921-- 8%
Orders received during January, 1922-- 6%
Orders received during February, 1922-- 4%
Orders received during March, 1922----- 2%

One fourth cash with order, balance before shipment.

QUEENS

| | |
|---|---|
| 1 untested Queen $1.25, 25 or more | $1.00 |
| 1 tested Queen $2.50, 25 or more | 2.25 |
| 1 select tested Queen, $3.00, 25 or more | 2.50 |

NUCLEI

| | |
|---|---|
| Two-comb regular Nuclei | $3.60 |
| Twenty-five or more | 3.45 |

PACKAGES

| | |
|---|---|
| One 2-lb. package, $3.60; 25 or more | $3.45 |
| One 3-lb. package, $5.00, 25 or more | 4.75 |

Add price of queens wanted when ordering above packages.

**PATTERSON & WINTERS, Jourdanton, Tex.**

**References: Adams Nat. Bank, Devine, Texas; Atascosa State Bank, Jourdanton, Tex.**

**HONEY** **WANTED** **HONEY**

We are in the market for both comb and extracted. Send sample of extracted, state how put up with lowest price delivered Cincinnati. Comb honey, state grade and how packed with lowest price delivered Cincinnati. We are always in the market for white honey if price is right.

**C. H. W. WEBER & CO., 2163-65-67 Central Ave., Cincinnati, O.**

**I HAVE SHAVED** my prices on queens for the season of 1922 to conform to the general reduction in prices of other commodities, but the high quality will be maintained; in fact, I make it a rule to produce better queens every year. My experience has shown me that the stronger the colony that builds the cells, the larger, better and more uniform will be the queens thus reared. While it is more expensive to produce queens in this manner, for many colonies are weakened in order to supply brood for the cell builders, yet it pays us, as it creates a steady demand for our queens at prices that are fair to all concerned. But it pays the purchaser still more, for he gets splendid queens that give large returns in honey.

The season just closed was very satisfactory in that we were able to fill most orders at the time promised, but still we had some more orders than we were able to fill. We are increasing our nuclei and will make an earnest effort to give prompt service the coming year, but I solicit the co-operation of our customers in this matter, and in order to facilitate prompt shipment, we request that you anticipate your needs as far in advance as possible and place your order early. No cash is required in booking an order, but money may be sent any time before date of shipment. However, as some will find it convenient to send cash with order, we will allow a **discount of 6 per cent on all cash orders received in December.** A card will bring our catalog.

| 1922 Prices.—Before August 1. | |
|---|---|
| 1 to 4, inclusive | $2.50 each |
| 5 to 9, inclusive | 2.45 each |
| 10 or more | 2.40 each |

| After August 1. | |
|---|---|
| 1 to 4, inclusive | $2.00 each |
| 5 to 9, inclusive | 1.95 each |
| 10 or more | 1.90 each |
| Breeding queens | 10.00 each |

**JAY SMITH, ROUTE 3 Vincennes, Indiana**

ITALIAN BEES AND QUEENS

Let us quote you on the bees and queens you will need in 1922. We can save you money and will guarantee the goods and service. Tell us how many you need, we will quote you special prices.

THE STOVER APIARIES, MAYHEW, MISSISSIPPI

**ELECTRIC IMBEDDER**

Price without Batteries, $1.50
Not Postpaid.

Actually cements wires in the foundation. Will work with dry cells or with city current in connection with transformer. Best device of its kind on the market.

For sale by all supply dealers.

**Dadant & Sons,** Manufacturers HAMILTON, ILL.

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**We are the HUB for HUBAM**

Guaranteed, certified, Annual Sweet Clover. All new crop, grown on our own farms and all from the first 50 seeds from that original plant at Ames. We are shipping to all parts of the world now. HUBAM is being planted somewhere every day for bee pasture, hay, pasture, or for green manure to plow in.

The seed is hulled and scarified, with a purity of 99.8 per cent, and grows 97 per cent. Price now is $2 per pound. Our seed is pure. You buy from an old, established firm with a reputation to maintain when you buy from

**THE HENRY FIELD SEED CO.**
SHENANDOAH, IOWA

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**1922**

Place your order now for 1922 delivery of

FOREHAND'S THREE-BANDS
The Thrifty Kind

They are surpassed by none, but superior to many.

Package Bees. Three-band Queens

Write for prices now.

**W. J. FOREHAND & SONS**
Fort Deposit, Ala.

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**5 REASONS WHY—**

**YOU WILL WANT TO SEND US THE COUPON AT ONCE**

*Money Saved is Money Made*

THE A. I. ROOT CO. OF IOWA,
Council Bluffs, Ia.

Gentlemen: Kindly name your fall prices of the following:

1. Eight-frame hives, metal covers, complete, sets 5 KD.
2. Eight-frame bodies, with frames, complete, sets 5 KD.
3. Shipping cases, lots of________________
4. Cans. jars, pails and second-hand 5-gallon cans.
5. Honey tanks.

Name____________________________________

Address__________________________________

City_____________________________________

State____________________________________

**THE A. I. ROOT CO. OF IOWA**
**COUNCIL BLUFFS, IOWA**

# TIME TO STUDY WOODS

## For the Bee Man This is the Period "Between Hay and Grass"

CYPRESS RESISTS ALL ROT INFLUENCES

CYPRESS "THE WOOD ETERNAL"

While waiting for the honey-season to begin, suppose you investigate the relative values of different commercial woods. Few business undertakings call for more exacting care on the part of the buyer than getting the best lumber for the bee-man's use. In many respects bee-hive construction is like Greenhouse construction—both are most trying on the material used.

Cypress is the only wood that "stands up" in Greenhouse work. It resists the rot influences that infest the Greenhouse. No other wood is so thoroughly certified for this use as is Cypress.

If Cypress will "stand the racket" in Greenhouse construction it certainly will do the right thing by you in beekeeping.

### READ CYPRESS BOOKS

Those who would get accurate information regarding Cypress wood and its extraordinary power to resist rot influences should provide themselves with copies of the Cypress Pocket Library. There are 43 volumes, each authentic and authoritative. **Write us** and tell us what subject you are interested in and will send you the appropriate booklet. We especially suggest you **write for Vol. 1,** with the unabridged U. S. Govt. Rept. on Cypress, "The Wood Eternal," that is a **buy** because it lasts so like—well, it lasts and lasts and lasts and lasts and lasts.

**SOUTHERN CYPRESS MANUFACTURER'S ASSOCIATION**

1251 POYDRAS BUILDING, NEW ORLEANS, LA.

1251 GRAHAM BUILDING, JACKSONVILLE, FLA.

FOR QUICK SERVICE ADDRESS NEAREST OFFICE

# DO YOU USE ALUMINUM HONEYCOMBS?

## IF NOT, WHY NOT?

**Each comb is in itself a valuable asset to any apiary. It is the only comb which enables BEEKEEPERS TO OBTAIN ALL THE HONEY without waiting for the bees to draw out foundation. THEREBY SAVING TIME AND MONEY.**

**We can prove that no practical BEEKEEPER can afford to be without the ALUMINUM HONEYCOMB**

In a recent issue of a National Bee Publication the following question and its answer appeared:

Q. What is the total cost of a fully drawn out wax comb?
A. The mininum cost of drawing out a wax comb is 50 cents.

PRACTICAL BEEKEEPERS are buying ALUMINUM HONEYCOMBS because they

Cannot be destroyed by moths or rodents
Make extracting of honey easy
Control production of drones
**Can be sterilized**

Prevent loss by melting
Increase production
Last forever with reasonable care
**Cost no more than wax combs**

THE DIAMOND MATCH CO., Apiary Dept., CHICO, CAL.

**Sole distributors for DUFFY-DIEHL, Inc., Pasadena, Cal**

*This is the First* of a series of advertisements which will appear from month to month featuring "Root Quality" products which are the results of revolutionary developments in manufacturing supplies and equipment for beekeepers and honey producers.

# AIRCO

*On this page* next month will be given a brief sketch of development of the honey extractor from the first crude machine down to the latest modern product of engineering skill and mechanical design.

## *The Comb Foundation with a Perfect Cell Base*

After years of experimenting and at an expense of thousands of dollars, the new Airco process of manufacturing comb foundation was perfected. That this time and expense was justified is amply demonstrated by the numberless testimonials received from all parts of the world. Airco foundation has marked a new era in beekeeping.

The superiorities of Airco over the old-style foundation made upon cut mills are two-fold:

1. The new milling process makes possible a base with a natural comb angle; a base with no distortion; a foundation with no imperfect cells; and a foundation with reinforced and braced cell walls.

2. The new refining process insures denser and tougher wax, cleaner wax, more ductile wax, and wax that stays fresh much longer.

ASK THE BEES—They know what they want and why they want it.

Send for our free booklet, "Why Bees Prefer Airco Comb Foundation."

Order early and save delay. 4 per cent early-order cash discount for December.

*"There is a Root Dealer near you"*

**THE A. I. ROOT COMPANY, Medina, O.**

*Fifty-two Years in the Bee Supply Industry*

New York, 23 Leonard St.
Philadelphia, 8-10 Vine St
Chicago, 224 W Huron St.
Indianapolis, 873 Mass. Ave.

St. Paul, Minn., 290 E. 6th St.
Norfolk, Va., 10 Commerce St.
New Orleans, La., 224 Poydras St.
Syracuse, N. Y., 1631 W. Genesec St.

Savannah, Ga , 126 W. Bay St.

(Watch this page in the January issue for the next installment)